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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

REPORT OF A COLLECTIVE INVESTIGATION ON THE CURETTEMENT OF THE EUSTACHIAN TUBE IN CHRONIC AURAL SUPPURATION.*

DR. SIDNEY YANKAUER, New York City.

In presenting for your consideration the procedure suggested by me for the cure of chronic otorrhea, in an article in THE LARYNGOSCOPE of July, 1910, I do so pursuant to a suggestion that I state my present views on this subject.

My own experience since the publication of the article mentioned, has confirmed the views therein expressed; but if a new method of procedure can be carried out only by the originator thereof, it will be of benefit only to the few patients with whom he comes into personal contact; if, on the other hand, the difficulties of technique and general management have been successfully mastered by a sufficient number of other operators in a reasonably large number of cases, the average results obtained by these operators must express the true value of the procedure. Therefore, the experience of others will be of interest and is here presented. In order to ascertain what the experience of other otologists has been with this operation, I have addressed a series of questions to over six thousand otologists in the United States and other parts of the world. Among nearly two thousand replies which I have received, I have found 119 operators who had performed the operation from

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one to fifty-three times, the total number of cases operated upon being 735. This number, both of operators and of cases is, I feel, sufficiently large to warrant statistical deductions, and the interpretation of these figures will be here considered. I wish again to emphasize the fact that the results here reported are not my own, but are the results obtained by other otologists, most of them personally unknown to me, who have derived their knowledge of this procedure from the single article mentioned above. I am entirely satisfied to accept these results as indicating the value of this procedure at the present time, and to stand squarely upon the figures derived from this collective investigation.

Inasmuch as the operation is based upon the principle that the closure of the Eustachian tube is essential to the healing of the diseased ear, it naturally follows that in those cases in which organic atresia did not result from the operation, a cure could not be expected, and the statement that the closure of the tube will be followed by a cure can be true only of those cases in which the tube has actually been closed. However, both sets of figures will be given. Of the 735 cases the tube was successfully closed, after one or more curettings, in 609, or 83 per cent of the cases. The number of patients reported as cured is 379, or 51.5 per cent of the total number, or 62 per cent of the number in which the tube was successfully closed. In other words, more than one-half of all cases of chronic suppuration of the middle-ear have been cured by closing the Eustachian tube through the intact external auditory meatus and without other surgical treatment. These figures alone are sufficiently high in my estimation to accord to this procedure a permanent place in our practice.

Let us consider therefore the indications and contra-indications for the procedure, as derived from the figures of this investigation. It has been my experience, which I have now confirmed by observations extending over ten years, that it may be stated as a dictum that whenever the Eustachian tube is permanently closed by organic atresia, a perforation in the drum membrane will never close and cannot be made to close. Whenever, therefore, in any case it seems to be possible to restore the continuity of the drum membrane after the suppuration has subsided, and so restore the ear to a perfectly normal condition, the Eustachian tube must not be closed. In such cases the operation is contra-indicated, as it is also in those cases in which it is intended to perform one of the so-called conservative, radical operations, which are also supposed to result in the closure of the drum membrane. Furthermore, the procedure is adapted only for the cure of a chronic suppurative process and should never

Number.	Name and Address.	How many cases have you operated by curetting the Eustachian tube as described in the article quoted above?	In how many cases was the suppuration cured?	In how many cases was the suppuration improved?	In how many cases was the suppuration unimproved?	Result not reported.
1.	Nora Roger, M. D., Chicago, Ill.	3	2	1	....	....
2.	R. O. Brown, M. D., Forreston, Ill.	53	49	4	....	....
3.	J. B. Cato, M. D., Hutsonville, Ill.	1	....	1	....	....
4.	W. K. Butler, M. D., Washington, D. C.	1	....	1	....	....
5.	R. Nyswander, M. D., LaSalle, Ill.	11	8	....	....	3
6.	Zdenko von Dworzak, M. D., Denver, Colo.	3	....	2	1	....
7.	Frederick L. Bogan, M. D., Boston, Mass.	18	5	9	4	....
8.	W. J. Bussy, M. D., Sioux City, Iowa.	2	....	1	1	....
9.	F. E. Franchere, M. D., Sioux City, Iowa.	3	1	1	1	....
10.	Alfred Braun, M. D., New York City, N. Y.	5	....	2	3	....
11.	Esli T. Morden, M. D., Adrian, Mich.	10	2	7	1	....
12.	F. W. Sassaman, M. D., Charlotte, Mich.	2	2	....	....	....
13.	B. A. Richards, M. D., Rochester, N. Y.	2	....	....	2	....
14.	B. B. Griffith, M. D., Vincennes, Ind.	8	3	4	1	....
15.	R. B. Canfield, M. D., Ann Arbor, Mich.	11	5	3	3	....
16.	J. Lawrence Dias, M. D., Newark, N. J.	1	1	....	....	....
17.	S. Kirkpatrick, M. D., Selma, Ala.	3	....	1	2	....
18.	Hugh Miller, M. D., Kansas City, Mo.	2	1	....	1	....
19.	Harold M. Hays, M.D., New York City, N.Y.	8	4	2	2	....
20.	Wm. F. Beggs, M. D., Newark, N. J.	6	2	4	....	....
21.	I. W. Voorhees, M. D., New York City.	1	....	1	....	....
22.	L. T. Richie, M. D., Trinidad, Colo.	6	4	1	1	....
23.	Albert E. Derwent, M. D., Clinton, Mo.	9	7	....	1	1
24.	Wm. G. Shemely, M. D., Camden, N. J.	3	3	....	....	....
25.	E. Danziger, M. D., New York City, N. Y.	4	1	2	1	....
26.	Emil Mayer, M. D., New York City, N. Y.	3	2	....	1	....
27.	Douglas Wood, M. D., Minneapolis, Minn.	5	3	1	....	1
28.	Clarence L. Zugg, M. D., Kansas City, Mo.	1	1	....	....	....
29.	H. M. Cunningham, M. D., Marquette, Mich.	6	4	....	2	....
30.	Edward J. Berstein, M. D., Kalamazoo Mich.	13	8	3	2	....
31.	Howard B. Hills, M. D., Youngstown, Ohio.	2	2	....	....	....
32.	G. F. Brewington, M. D., Bevier, Mo.	1	1	....	....	....
33.	J. C. Hill, M. D., Bicknell, Ind.	12	9	2	....	1
34.	A. D. McConachie, M. D., Baltimore, Md.	3	2	....	1	....
35.	N. W. Price, M. D., Niagara Falls, N. Y.	2	2	....	....	....
36.	Frank C. Todd, M. D., Minneapolis, Minn.	4	1	....	3	....
37.	L. G. Kaempfer, M. D., New York City, N.Y.	3	2	1	....	....
38.	L. M. Hubby, M. D., New York City, N.Y.	3	....	....	3	....
39.	Wm. F. Patton, M. D., New Orleans, La.	2	2	....	....	....
40.	George E. Adkins, M. D., Jackson, Miss.	17	11	....	6	....
41.	Norton L. Wilson, M. D., Elizabeth, N. J.	8	6	2	....	....
42.	C. Edward Ide, M. D., Los Angeles, Cal.	11	5	4	2	....
43.	Chas. E. Benham, M. D., Tarkio, Mo.	10	10	....	....	....
44.	Chas. A. O'Reilly, M. D., Philadelphia, Pa.	2	2	....	....	....
45.	Edwin Cobb, M. D., Marshalltown, Iowa.	3	....	2	1	....
46.	Arthur W. Walker, M. D., Riverside, Cal.	6	5	....	1	....
47.	H. H. Amsden, M. D., Concord, N. H.	1	1	....	....	....
48.	L. C. Ingram, M. D., De Land, Fla.	8	5	1	2	....
49.	W. E. Coleman, M. D., Chipley, Fla.	5	3	2	....	....
50.	J. F. McKernon, M. D., New York City, N.Y.	8	2	2	4	....
51.	Josef E. Windbiel, M. D., Amsterdam, N. Y.	3	1	2	....	....
52.	Francis A. Hamlin, M. D., Bakersfield, Cal.	4	2	1	1	....
53.	Robert L. Nourse, M. D., Boise, Idaho.	1	1	....	....	....
	[illegible]	4	4			

Result not reported.	In how many cases was the tube closed after the first curetting?	How often was a second curetting needed?	How often was it necessary to curette more than twice?	In how many cases did the tube re-open after it had apparently been closed?	In how many cases was it impossible to obtain closure of the tube?
...	...	...	...	18	...
...	...	1	...	1	1
3	6	...	...	...	...
...	...	1	...	2	2
...	15	3	...	3	3
...	...	2	1	...	...
...	1	2	...	1	...
...	5	...	...	...	...
...	1	9	3	1	7
...	1	1	1	1	...
...	...	...	2	...	2
...	2	3	1	4	2
...	2	3	1	1	3
...	...	...	1	...	...
...	1	2	...	...	1
...	...	...	...	...	...
...	3	5	...	1	1
...	4	...	2	3	1
...	...	1	...	1	...
...	2	3	1	1	...
1	1	8	...	...	...
...	1	2	1	1	...
...	1	...	...	...	...
...	1	1	...	1	1
1	3	1	...	1	1
...	...	...	1	1	1
...	3	...	...	1	...
...	6	2	...	...	...
...	1	1	...	1	...
...	...	...	...	...	...
1	1	1	1	8	...
...	2	...	...	1	1
...	...	...	...	...	...
...	2	1	...	1	2
...	1	1	...	...	1
...	...	...	...	...	3
...	1	2	...	...	...
...	9	2	...	...	...
...	6	2	...	2	...
...	8	3	2	2	2
...	...	6	3	1	...
...	2	...	...	...	...
...	...	...	...	1	1
...	5	1	...	...	...
...	...	...	...	...	...
...	3	5	1	...	...
...	...	...	...	...	4
...	...	8	3	4	4
...	...	1	...	1	2
...	2	1	1	1	1
...	...	1	...	...	...

In how many cases was it impossible to obtain closure of the tube?	In how many cases was the hearing improved?	In how many cases was the hearing unimproved?	In how many cases was the hearing made worse?	In how many cases was the tinnitus improved?	In how many cases was the tinnitus unimproved?	In how many cases was the tinnitus made worse?	In how many cases was there severe hemorrhage?
....	53	....	....	47	6	....	....
1	1	....	....	1	....	....	....
....	....	....	....	....	....	....	....
....	8	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	13	4	1	11	4	3	....
....	....	2	....	....	2	....	....
....	1	2	....	1	2	....	1
....	....	5	....	....	....	....	....
7	2	7	1	2	5	1	....
....	2	....	2	....	....	....	2
2	....	....	....	....	....	....	....
2	3	5	....	5	3	....	....
3	3	3	....	....	....	....	....
....	....	1	....	1	....	....	....
1	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
1	3	5	....	....	....	....	....
1	....	....	....	....	....	....	....
....	1	....	....	....	....	....	....
....	....	6	....	2	4	....	1
....	4	5	....	3	6	....	....
....	2	1	....	2	....	1	....
....	....	....	....	....	....	....	....
1	....	....	....	....	....	....	....
1	3	1	....	3	....	....	1
1	1	....	....	....	....	....	....
....	3	3	....	1	....	....	....
....	2	6	....	....	....	....	....
....	....	2	....	2	....	....	....
....	....	....	....	....	....	....	1
....	7	3	....	7	1	....	2
1	1	1	....	....	....	....	....
....	....	....	....	....	....	....	....
2	....	4	....	....	4	....	....
1	3	....	....	....	....	....	....
3	....	3	....	....	3	....	....
....	1	1	....	2	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
2	7	3	1	8	3	....	....
....	8	2	....	10	....	....	....
....	1	1	....	2	....	....	....
1	....	3	....	2	1	....	....
....	3	3	....	6	....	....	....
....	....	....	....	....	....	....	....
....	6	2	....	3	....	....	....
4	1	....	5	....	....	1	....
4	....	....	....	....	....	....	....
2	1	1	....	2	....	....	1
1	3	1	....	1	....	....	....
....	1	....	....	1	....	....	....

In how many cases was there severe hemorrhage?	In how many of the unsuccessful cases was a radical operation subsequently performed?	Of these, how many were cured?	Of these, how many were not cured?	If there have been any deaths attributable to the operation, state the number and give the incidents of the fatality.
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....	....	....	....	....
....	....	....	....	....
....	1	1	....	....
....	....	....	....	....
....	4	4	....	....
....	1	....	1	....
1	1	1	....	....
....	1	1	....	....
....	2	....	2	....
2	....	....	....	....
....	2	2	....	....
....	1	1	....	....
....	2	2	....	....
....	....	....	....	....
....	1	1	....	....
....	....	....	....	....
....	....	....	....	....
....	1	1	....	....
....	....	....	....	....
1	....	....	....	....
....	2	2	....	....
....	....	....	....	....
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....	1	1	....	....
1	2	1	1	....
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....	....	....	....	....
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1	....	....	....	....
2	....	....	....	....
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....	1	1	....	....
....	....	....	....	....
....	6	6	....	....
1	....	....	....	....
....	1	1	....	....
....	....	....	....	....
....	....	....	....	....

28.	Clarence L. Zugg, M. D., Kansas City, Mo.	1	1	....	....	....
29.	H. M. Cunningham, M. D., Marquette, Mich.	6	4	....	2	....
30.	Edward J. Berstein, M. D., Kalamazoo Mich.	13	8	3	2	....
31.	Howard B. Hills, M. D., Youngstown, Ohio..	2	2	....	....	....
32.	G. F. Brewington, M. D., Bevier, Mo.....	1	1	....	....	....
33.	J. C. Hill, M. D., Bicknell, Ind.....	12	9	2	....	1
34.	A. D. McConachie, M. D., Baltimore, Md.....	3	2	....	1	....
35.	N. W. Price, M. D., Niagara Falls, N. Y.....	2	2	....	....	....
36.	Frank C. Todd, M. D., Minneapolis, Minn.....	4	1	....	3	....
37.	L. G. Kaempfer, M. D., New York City, N.Y.	3	2	1	....	....
38.	L. M. Hubby, M. D., New York City, N.Y.	3	....	....	3	....
39.	Wm. F. Patton, M. D., New Orleans, La.....	2	2	....	....	....
40.	George E. Adkins, M. D., Jackson, Miss.....	17	11	....	6	....
41.	Norton L. Wilson, M. D., Elizabeth, N. J.....	8	6	2	....	....
42.	C. Edward Ide, M. D., Los Angeles, Cal.....	11	5	4	2	....
43.	Chas. E. Benham, M. D., Tarkio, Mo.....	10	10	....	....	....
44.	Chas. A. O'Reilly, M. D., Philadelphia, Pa...	2	2	....	....	....
45.	Edwin Cobb, M. D., Marshalltown, Iowa.....	3	....	2	1	....
46.	Arthur W. Walker, M. D., Riverside, Cal.....	6	5	....	1	....
47.	H. H. Amsden, M. D., Concord, N. H.....	1	1	....	....	....
48.	L. C. Ingram, M. D., De Land, Fla.....	8	5	1	2	....
49.	W. E. Coleman, M. D., Chipley, Fla.....	5	3	2	....	....
50.	J. F. McKernon, M. D., New York City, N.Y.	8	2	2	4	....
51.	Josef E. Windbiel, M. D., Amsterdam, N. Y.	3	1	2	....	....
52.	Francis A. Hamlin, M. D., Bakersfield, Cal.	4	2	1	1	....
53.	Robert L. Nourse, M. D., Boise, Idaho..... ..	1	1	....	....	....
54.	Wm. A. Martin, M. D., San Francisco, Cal.	4	4	....	....	....
55.	Stanwood E. Fisher, M. D., Portland, Me.....	3	....	....	3	....
56.	I. Friesner, M. D., New York City, N. Y.....	6	2	....	4	....
57.	E. T. McKeown, M. D., Denver, Colo.....	3	....	3	....	....
58.	B. E. Garrison, M. D., Danville, Ind.....	1	....	1	....	....
59.	Geo. A. Leahey, M. D., Lowell, Mass.....	2	1	1	....	....
60.	Joseph B. Kanter, M. D., Brooklyn, N. Y...	2	....	....	2	....
61.	F. E. Campbell, M. D., West Medford, Mass.	3	2	....	1	....
62.	Albert B. McKee, M. D., San Francisco Cal.	1	1	....	....	....
63.	A. A. Yungblut, M. D., Cincinnati, Ohio.....	2	....	....	2	....
64.	Benjamin Thomas, M. D., Palo Alto, Cal.....	1	1	....	....	....
65.	Geo. M. Coates, M. D., Philadelphia, Pa.....	9	3	2	4	....
66.	S. Oppenheimer, M. D., New York City, N.Y.	20	8	....	....	12
67.	John J. Sullivan, M. D., Scranton, Pa.....	5	3	2	....	....
68.	Lycurgus M. Gurley, M. D., Johnstown, Pa.	8	6	2	....	....
69.	H. Alexander Brown, M. D., Reno, Nevada	7	5	1	1	....
70.	U. D. Seidel, M. D., Akron, Ohio.....	1	1	....	....	....
71.	Benjamin Thomas, M. D., Huron, S. D.....	6	5	1	....	....
72.	R. H. Gough, M. D., Fort Worth, Texas.....	2	1	1	....	....
73.	H. R. Johnson, M. D., Fairmont, W. Va.....	3	2	1	....	....
74.	C. J. Abbott, M. D., Cleveland, Ohio.....	2	....	2	....	....
75.	Wm. Lapat, M. D., Savannah, Ga.....	1	1	....	....	....
76.	Lee Weber, M. D., Davenport, Iowa.....	17	8	3	6	....
77.	Wm. L. Rohrer, M. D., Milwaukee, Wis.....	9	6	1	2	....
78.	F. P. Hoover, M. D., Jacksonville, Fla.....	39	10	18	11	....
79.	M. O. Fisher, M. D., Parkersburg, W. Va....	5	4	1	....	....
80.	Warren C. Batroff, M. D., Philadelphia, Pa.	5	2	3	....	....
81.	R. C. Lynch, M. D., New Orleans, La.....	12	4	5	3	....
82.	E. M. Bixby, M. D., Pomona, Cal.....	1	....	....	1	....
83.	L. H. Lanier, M. D., Texarkana, Texas.....	2	1	....	1	....
84.	R. W. Miller, M. D., Los Angeles, Cal.....	1	1	....	....	....
85.	G. C. Hall, M. D., Louisville, Kentucky.....	15	9	....	....	6
86.	D. D. McHenry, M. D., Oklahoma City, Okla.	1	....	1	....	....
87.	F. B. Kistner, M. D., Portland, Oregon.....	7	4	1	2	....
88.	W. Y. Croxall, M. D., Aberdeen, Wash.....	4	1	1	2	....
89.	W. E. McClellan, M. D., Hartford, Conn.....	6	2	2	2	....
90.	A. M. MacWhinnie, M. D., Seattle, Wash.....	3	3	....	....	....
91.	F. W. Smith, M. D., Philadelphia, Pa.....	1	1	....	....	....
92.	E. Blunden, M. D., Cincinnati, Ohio.....	6	3	3	....	....
93.	O. Glogau, M. D., New York City, N. Y.....	7	3	1	3	....
94.	J. R. Gillum, M. D., Terre Haute, Indiana	3	2	....	1	....
95.	C. W. Bishop, M. D., Saskatchewan, Can.....	1	....	1	....	....
96.	S. D. Brazeau, M. D., Spokane, Wash.....	1	....	....	....	1
97.	E. H. Bosse, M. D., St. Louis, Mo.....	2	....	2	....	....
98.	M. Adair Dighton, M. D., Liverpool, Eng..	7	2			

1	3	1	...	1	1
...	...	...	1	1	1
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1	1	1	1	8	...
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...	5	1	...	...	...
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12	8	3	...	12	...
...	3	2	...	1	1
...	6	1	1	...	...
...	4	2	1	2	...
...	1	...	...	...	...
...	4	...	...	1	4
...	1	...	...	1	...
...	1	2	...	...	1
...	2	...	...	1	...
...	...	...	...	1	...
...	11	9	4	2	2
...	3	4	1	...	1
...	17	5	...	10	...
...	4	1	...	...	...
...	3	2	...	2	...
...	4	5	1	3	3
...	...	...	...	...	1
...	...	1	...	1	1
...	1	...	...	...	...
6	12	2	1	3	1
...	...	...	...	1	...
...	3	2	2	4	2
...	1	...	...	...	2
...	1	5	2	3	1
...	2	1	...	1	...
...	1	...	...	...	...
...	2	6	...	...	1
...	3	4	...	3	3
...	2	...	1	...	...
...	1	...	...	1	...
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1	1	....	....	....	....	....	....
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....	7	3	....	7	1	....	2
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4	1	....	5	....	....	1	....
4	....	....	....	....	....	....	....
2	1	1	....	2	....	....	1
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....	....	8	....	....	7	1	2
....	4	2	1	5	1	1	1
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4	....	1	....	....	....	....	1
....	1	1	....	....	....	....	....
1	....	3	....	....	....	....	....
....	....	2	....	2	....	....	....
....	....	1	....	....	....	....	....
2	9	8	....	5	12	....	....
1	7	2	1	7	2	2	4
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2	2	....	2	....	....	....	1
2	2	2	....	1	....	....	....
1	1	5	....	....	....	....	1
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2	2		
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6	6		
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1	not recorded		
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4	4		
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2		2	

84.	R. W. Miller, M. D., Los Angeles, Cal.					
85.	G. C. Hall, M. D., Louisville, Kentucky	15	9	....	....	6
86.	D. D. McHenry, M. D., Oklahoma City, Okla.	1	....	1	....	....
87.	F. B. Kistner, M. D., Portland, Oregon	7	4	1	2	....
88.	W. Y. Croxall, M. D., Aberdeen, Wash.	4	1	1	2	....
89.	W. E. McClellan, M. D., Hartford, Conn.	6	2	2	2	....
90.	A. M. MacWhinnie, M. D., Seattle, Wash.	3	3	....	....	....
91.	F. W. Smith, M. D., Philadelphia, Pa.	1	1	....	....	....
92.	E. Blunden, M. D., Cincinnati, Ohio	6	3	3	....	....
93.	O. Glogau, M. D., New York City, N. Y.	7	3	1	3	....
94.	J. R. Gillum, M. D., Terre Haute, Indiana	3	2	....	1	....
95.	C. W. Bishop, M. D., Saskatchewan, Can.	1	....	1	....	....
96.	S. D. Brazeau, M. D., Spokane, Wash.	1	....	....	....	1
97.	E. H. Bosse, M. D., St. Louis, Mo.	2	....	2	....	....
98.	M. Adair Dighton, M. D., Liverpool, Eng.	7	2	....	....	5
99.	H. E. Blanchard, M. D., Providence, R. I.	3	2	1	....	....
100.	L. Ostrom, M. D., Rock Island, Ill.	3	1	....	2	....
101.	C. E. Purcell, M. D., Paducah, Kentucky	5	2	....	....	3
102.	S. L. Terrell, M. D., Dallas, Texas	4	....	2	2	....
103.	P. M. Farrington, M. D., Memphis, Tenn.	4	4	....	....	....
104.	A. Van Rossem, M. D., Rotterdam, Holland	23	9	2	12	....
105.	G. E. Bruere, M. D., Portland, Oregon	5	3	1	1	....
106.	H. G. Beatty, M. D., Columbus, Ohio	4	2	2	....	....
107.	F. B. Larimore, M. D., New Philadelphia, O.	10	4	1	5	....
108.	G. A. Spencer, M. D., Sacramento, Cal.	4	4	....	....	....
109.	C. E. Cooper, M. D., Denver, Colo.	10	2	....	8	....
110.	D. E. Welsh, M. D., Grand Rapids, Mich.	3	3	....	....	....
111.	J. G. Arneberg, M. D., Grand Forks, N. D.	2	1	1	....	....
112.	Drs. White & White, Tulsa, Okla.	6	4	2	....	....
113.	L. Jacobs, M. D., New York City, N. Y.	3	3	....	....	....
114.	G. W. Huber, M. D., Coffeyville, Kansas	8	1	1	6	....
115.	D. A. Gleason, M. D., Oxford, N. Y.	3	2	....	1	....
116.	D. A. Vanderhoof, M.D., Colorado Spgs. Colo.	1	1	....	....	....
117.	H. V. Wurdemann, M. D., Seattle, Wash.	5	5	....	....	....
118.	M. D. Ritchie, M. D., Pittsburgh, Pa.	47	16	20	11	....
119.	J. Auerbach, M. D., New York City, N. Y.	12	5	....	7	....
	Total	735	379	162	160	33

6	12	2	1	2	2	....	....
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....	2	....	1	....	....	1	2
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1	....	....	....	....	1	....	....
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5	....	....	....	....	....	....	1
....	3	....	....	....	....	1	2
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3	2	3	1	2	....	....	5
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....	4	....	....	....	....	....	....
....	....	....	....	....	23	....	23
....	....	5	1	1	....	3	2
....	1	1	....	....	....	....	....
....	1	3	1	....	....	....	10
....	4	....	....	1	....	....	3
....	2	8	....	....	....	....	....
....	2	1	....	....	....	2	1
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....	6	....	....	1	....	4	1
....	3	....	....	....	....	1	....
....	1	3	....	3	4	2	6
....	2	....	1	....	1	....	3
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....	5	....	3	....	....	....	....
....	11	4	4	4	6	21	24
....	3	2	....	1	7	....	12
33	266	193	51	139	26	258	281

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23	....	23	....	....	....	....	....
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....	4	1	....	4	1	....	1
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4	2	6	....	1	5	1	1
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6	21	24	2	10	35	2	....
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26	258	281	25	189	159	17	26

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....	6	5	1	....
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26	70	60*	8	1

*Two not recorded.

be employed in the presence of an acute exacerbation. In like manner, the presence of labyrinthine or intracranial complications demands the immediate exposure of the entire diseased area, and to delay such exposure until the results of tubal atresia can be known would be entirely unjustifiable; besides which, in the presence of intracranial complications, even if these have become latent, any operative procedure upon the ear, short of a radical exposure of the entire diseased area, might be dangerous, as is suggested by the single death which has unfortunately followed this operation. The history of the case was communicated to me as follows:

"Case Orv. S., aged 10. When first seen by me in consultation, September 1st, 1914, the patient, from external appearances, was a very sick youngster. He had a beginning partial paralysis of right arm (sensation not affected) and leg and choreiform movements so marked that it was impossible for him to sit on a chair unsupported. He complained mainly of frontal headaches and discharging left nostril. He could not sleep nights because of the headaches which began three weeks previous and were getting worse. Inspection: Very emaciated and pale with bluish discoloration of lips. Heart beat with terrific force against the anterior chest wall which was slightly bulging over the cardiac area. Left nostril filled with a polypoid mass. This could be very readily seen without lifting tip of nose. Both ears had a slight discharge of a ropy character, no odor or discoloration, showing that there was probably no necrosis of bone. Enlarged diseased tonsils and adenoids. Transillumination showed left antrum dark. At this time made a diagnosis of polypoid degeneration of left ethmoid, diseased tonsils and adenoids. The following day he had a slight edema of his hands and feet.

Urine—trace of albumin, otherwise normal.

Blood—Hb. 40 per cent; reds 1,750,000; no differential leucocyte count was made because our regular laboratory man was out of the city. Wassermann at this time seemed to be negative. Heart enlarged downward and outward for about one inch; while he had murmurs at all valves practically, we felt that all his symptoms were due to a toxic absorption from his diseased nose and throat.

Previous History—Measles at three, scarlet at five. Had his tonsils supposedly removed seven times by various men during the last five years.

On account of his desperate physical condition, I decided to tone up his whole system for a week or ten days with rest in bed, etc. Ten days after my first visit I operated at the hospital under ether given by the Gwathmey method. One hour before operation I gave him a hypodermic injection of morphin 1/8 and scopolamin 1/150. Inserted a pharyngeal plug. Removed middle turbinate and ethmoids on left side. Punctured left antrum and washed it out with hydrogen peroxid, 3 per cent, then alcohol, 10 per cent and decinormal sodium chlorid. The antrum simply showed secretion of retention. Nothing pathological in the antrum.

The boy did so well that I removed his tonsils (with snare) and adenoids at the same sitting. Forty-eight hours after operation the swelling of his hands and feet had disappeared; but the thing of greatest interest to us was the complete cessation of all choreiform movements and disappearance of beginning paralysis in the right arm and leg. The boy's heart action and general health improved so that at the end of the third week he began to attend school regularly and took considerable out-door exercise. The discharge from the right ear ceased while that from the left ear gradually grew worse. Treated with alcohol method from middle of October, 1914, until February, 1915. At this time he was no better and the family requested me to do something. I curetted under ether. At this time the boy was practically well, except for this slight ear discharge. The hemorrhage at the time of operation was not considered alarmingly excessive. Convalescence in the hands of the family physician seemed to be uneventful, when, on the ninth day, the doctor called me up by telephone and stated that the boy complained of a terrific headache. I saw the boy and diagnosed meningitis. In seventy-two hours he had all the classical symptoms of a well developed meningitis. I had to keep him under the influence of morphin until the time of death, which occurred the fourteenth day after operation, following a massive hemorrhage from his left ear."

In an article recently published in the *New York Medical Journal*, Dr. Thomas J. Harris takes exception to this procedure on the ground that the Eustachian tube is an important part of the organ of hearing and that it should not be destroyed, but that its function

should be preserved whenever it is possible to do so. With this opinion I am in full accord, but it is worth while to consider whether in the class of cases with which we are dealing the Eustachian tube has any function which can be preserved, and whether it has not assumed a perverted and pathological function. The function of the Eustachian tube may be considered under two heads—ventilation and drainage. By ventilation we understand the free passage of air through the Eustachian tube so as to maintain an equality of air-pressure on both sides of the drum membrane, in order that it may vibrate in unison with the vibrations of sound. Now a drum membrane which is perforated cannot respond to sound vibrations brought to it from the air, for the resonance of the drum depends upon the shape of the membrane as well as upon its tension as regulated by the tensor tympani muscle. When there is a perforation which cannot be closed, the shape of the membrane has been destroyed, and when suppuration has existed for a long time the thickenings and cicatricial contractures in the mucous membrane of the middle-ear, and in the ossicular chain and its muscles and tendons, will prevent such regulation. In other words, the remnant of the drum membrane is no longer a vibrating organ capable of transmitting sound from the external air to the fluid of the labyrinth. Even if it *could* vibrate, the equality of air-pressure on its two sides would be much more easily preserved through the perforation than through the Eustachian tube. The ventilating function of the Eustachian tube is therefore no longer useful.

The second function of the tube is drainage. In the perfectly healthy ear only the bony part of the tube is permanently open, the cartilaginous portion being normally closed and drainage of the small quantity of mucus secreted in the middle-ear is carried off through the tube by the action of cilia, which cover the surface of the mucous membrane of the normal cartilaginous tube. In chronic suppurative processes the cilia are destroyed and they can never be restored even when the suppuration ceases. Now the activity of the tube as an organ of drainage presupposes the passage of the aural secretion through its lumen. The lumen of the bony tube at its narrowest point, the isthmus, is one and one-half mm.; the lumen of the external auditory canal is about six mm. The passage of fluids through tubes depends upon the area of the cross section of the tubes. As the isthmus has one-quarter the diameter of the external auditory canal, the area of its cross section is one-sixteenth as great. The fluid would, therefore, meet with sixteen times as much resistance at the isthmus of the tube as it would in the external auditory canal. Now the fluid is so thick and its surface ten-

sion is so high that it will frequently refuse to flow out of the external auditory canal. It has only one-sixteenth as much chance to get through the isthmus and it is a law of physics that fluids will always follow the direction of least resistance. Even if it were possible for the secretion to flow through the isthmus, it would then meet with the resistance offered by the closed cartilaginous portion of the tube, and anyone who has syringed a suppurating ear knows that it is only when a considerable amount of pressure is used that any water (which is a much thinner and less viscid fluid than the aural secretion) can be driven through the tube into the throat. In short, in the presence of a perforation in the drum membrane, the drainage of secretion from the ear into the throat is a physical impossibility. The fact that in these cases a drop of secretion can frequently be seen in the pharyngeal mouth of the tube through the naso-pharyngoscope has been *wrongly* interpreted as indicating drainage from the ear; for this drop of secretion did not come down from the ear into the throat, but on the contrary, it is on its way to be driven from the throat into the ear. Furthermore, the idea of preserving the Eustachian tube as a drainage tube is a logical absurdity, for what is there to be drained away? If there is secretion in the middle-ear which requires a drain-pipe to carry it off, then the ear has not been cured, and if the ear has been cured, it is dry, absolutely and permanently dry, and there is no need for a drain-pipe.

We therefore see that in the conditions under consideration, both functions of the Eustachian tube have been permanently abrogated and can never be restored to it.

Whatever objections there may be to the closure of the Eustachian tube through the intact external auditory canal by the method under consideration, these same objections must also hold against the closure of the tube in the radical operation, for the method by which the closure is effected is the same in both cases, namely: the removal of the mucous membrane from the tube and its closure by granulation and cicatrization.

On the other hand, in the presence of a perforated drum membrane, the Eustachian tube has assumed a perverted function, for an intact drum membrane prevents the passage of air-currents through the tube, and it has been found by experiment both on the cadaver and the living that, without excessive pressure, it is impossible to force fluids through the Eustachian tube into the middle-ear. If this were not so, everybody would have an otitis media every time he blew his nose or sneezed.

When the drum membrane is perforated and its resistance is lost, it takes but a slight excess of pressure to force air through the tube and to propel particles of mucus bodily through the tube into the ear, a fact to which patients suffering from chronic aural suppuration have become so accustomed that they do not realize it until their attention is called to it.

It seems to me hardly necessary to repeat before this audience the well-known fact that suppuration of the ear *follows* infection of the naso-pharynx, and there is no one here who would assert that the aural suppuration is the primary factor and that the naso-pharynx has become diseased because the ear is draining into it. On the contrary, we are all familiar with the fact that a patient with a chronic aural suppuration is continually blowing his nose into his ears. It must, therefore, be accepted as true that instead of being a drainage tube, the Eustachian tube has become perverted into an avenue for the constant re-infection of the middle-ear, and that the closure of this avenue of infection has become imperative.

It is not an accidental coincidence that the men who first tried to close the Eustachian tube were those otologists who were most insistent upon the radical exposure of the diseased area in the middle-ear and its accessory cavities. For it was the radical otological surgeon who first discovered the fact that after he *had* thoroughly removed all the diseased tissue from the middle-ear, and converted the entire seat of the disease into a single, open wound, that he had not done enough, and that his cases did not heal in more than a small percentage; for the wound, however clean it might have been at the close of the operation, invariably became reinfected through the Eustachian tube. He therefore devised various methods of closing the tube. Some surgeons made a flap of mucous membrane from the mouth of the tube; others used the remnant of the drum membrane for this purpose; some devised curettes to remove the mucous membrane from the tube and others used burrs and reamers to ream out the tube with the same object in view; some surgeons used a chip of bone, which they removed from the cortex, as a plug which they drove down into the tube and some used a plug of ivory for the same purpose.

We see, therefore, that the necessity of closing the tube was first recognized by those surgeons who were most thorough in the removal of all the diseased tissue.

If the closure of the tube is necessary to secure healing when the entire diseased area has been converted into a single, smooth, shallow wound, how much less possible is it for nature to effect the healing of such a complicated series of passages as the middle-ear,

when the source of infection remains undisturbed and when fresh infection is being constantly added to that which already exists in the ear?

I cannot see, therefore, how we can escape the conclusion that inasmuch as the Eustachian tube has permanently lost its function, its closure is harmless; and, inasmuch as it assumes a perverted or pathological function, its patency is detrimental, and its closure has become a therapeutic necessity.

That it is possible to close the Eustachian tube by the technic and with the instruments described by me is attested by the fact that of the 735 cases here reported, 609, or 83 per cent have actually been closed.

Many of the surgeons who have responded to this investigation stated that they found these particular instruments, because of their shape and handiness, the most efficient for the curettement of the tube in the radical operation. Naturally, when the middle-ear cavity has been entirely exposed by this procedure, the surgeon's hand is guided not only by the sense of touch, but by the sight also, so that the management of the instrument is much easier under these circumstances. When the curette is used through the intact auditory canal, the operator is guided by the sense of touch only, and consequently the efficient use of the instrument requires more practice and experience. I believe that it is possible for any otologist to acquire sufficient skill to close the tube after the first curetting in practically all of the cases, so that it should not be necessary to curette more than once. Only 266 cases, or 36 per cent were closed after the first curetting in this series, while two or more curettings were needed in 244 cases. The fact also that the tube reopened in 139 cases, after it had apparently been closed, indicates that the curettement was insufficient, for if the mucous membrane is not removed from the entire circumference of the isthmus, atresia will follow. As the tube is often angular in cross section this is not always easy.

When this instrument was first devised about ten years ago, I stood in great awe of the danger of injuring the carotid artery, and took special pains to so construct the instrument as to ensure its safety as well as its efficiency, so that the operator could not lose control of it and plunge it through the bone. These precautions have apparently been well advised, for in not a single instance was the carotid artery injured; for there was no fatal hemorrhage at the time of operation in any case. In fact, hemorrhage sufficiently profuse to be designated as severe was reported in only 26,

or 3.6 per cent of the cases. Many of these cases were operated upon under general anesthesia, under which condition hemorrhage from the mucous membrane of any part of the head is always more severe; when done under local anesthesia, the addition of adrenalin usually prevents all hemorrhage.

On account of the fact that the capsule of the labyrinth constitutes the posterior wall of the tube, and that in curetting the tube we are removing the mucous membrane from the surface of the labyrinth capsule, the effect of this operation upon the hearing and upon the tinnitus, when this symptom is present, is of special interest. The hearing was reported upon in 564 cases, of which in 258, or 46 per cent, the hearing is reported as improved; in 281 cases, 50 per cent, as unimproved, and in 25 cases, or 4 per cent, as having been made worse. Now the total percentage of cases in which the suppuration was cured was 51 per cent; the total percentage of cases in which the hearing was improved was 46 per cent, so that of every 51 cases, in which the suppuration was cured, the hearing was improved in 46, i. e., in 90 per cent of the cured cases. In contrast to the behavior of the hearing after the radical operation, these figures need no comment.

The fact that in only 4 per cent of all cases was the hearing made worse is rather surprising, because when any operative procedure is undertaken in chronic aural suppuration, which does not lead to a cure, the hearing may well be expected to be made worse by the procedure.

Tinnitus was reported as having been present in 365 cases and of these, the tinnitus is reported as having been lessened in 189, or 52 per cent of the cases; unchanged in 159, or 43 per cent of the cases and made worse in 17, or 5 per cent of the cases. It is evident, therefore, that improvement in tinnitus also followed in as many cases as were cured of the suppuration, and, that it was not increased by this operative procedure, except in an insignificant percentage of the cases, is equally surprising as in the case of the hearing. Perhaps this may be explained by the behavior of those cases in which the suppuration was not cured, for more than half of these are reported as having been improved, that is to say, the suppuration was lessened.

We may, therefore, sum up the effect of this operation upon the suppurating ear by the statement that half of the cases are cured with an improvement in the hearing and a diminution of the tinnitus, and that in the cases that were not cured, half of them had the suppuration lessened.

It is therefore evident that the closure of the tube has a decidedly beneficial effect upon the suppuration, upon the tinnitus, and upon the auditory function.

This conclusion is of special interest to the otologist who desires to increase the percentage of his cures from the radical operation; for, of the cases which were not cured by curetting the tube, 70 were subjected subsequently to radical operation, and the result reported in 68. Of these 60, or 88 per cent, were reported as having been cured. This percentage of cures from the radical operation is much higher than the average otologist can show, and I believe that this unusually high percentage of cures was due to the fact that in these cases the suppuration was diminished and the entire condition of the ear improved by the preceding curettement of the tube.

To those who control large numbers of cases in hospital and dispensary practice, I should say that this procedure is one which can suitably be carried out in dispensary practice and under local anesthesia, and that this should be done in every case; that only those cases which, after a sufficient length of time have not healed should be submitted to more radical procedures. Not only will the number of cases requiring radical operation be diminished thereby, but the percentage of cures of those that are radically operated will be appreciably raised.

This collective investigation therefore justifies the following position:

Whatever method we adopt to secure the healing of the diseased middle-ear cavities, whether we allow nature to effect the healing unaided, whether we stimulate the efforts of nature by the administration of vaccines, whether we make nature's work easier by the removal of some of the diseased parts by minor surgery, or whether we make her work easiest of all by radically removing all diseased tissue, in any event, we must in every case prevent the reinfection of the diseased area by closing the avenue of infection, the Eustachian tube.

Based upon these figures, we may draw the following conclusions:

1. That closure of the Eustachian tube is harmless because it does not cause the loss of any function which has not already been permanently destroyed.

2. That it is a valuable therapeutic agent because by it alone half of the cases are cured and the rest so improved that it enables the radical operation to cure most of them.

3. That it is imperative, not only because the tube has assumed a perverted or pathological function, but because the only other re-

source which is open to the patient is a radical operation, in which case the tube must be closed anyway.

4. That every patient should be given the benefit of this procedure, not only because the chances of cure are sufficiently high, but also because if cured thereby the hearing will not only be preserved, but improved.

5. I believe that the figures here presented also justify me in making the statement that on account of the difference in the effect upon the hearing, the radical operation should be regarded as unjustifiable in any case where there is useful hearing left until a thorough trial has been given to the closure of the tube alone through the intact auditory passages.

616 Madison Avenue.

Auricular Hematidrosis. E. GUARNACCIA and V. SBORNI, *Arch. ital. di Otol., Rinol. e Laryngol.*, V. 27, No. 3, 1915.

True hematidrosis is a localized transcutaneous hemorrhage taking place through the intact skin. It usually occurs in hysterical patients and seems to stand in relationship to vicarious menstruation in general. While hematidrosis may occur in various localities (finger-tips, forehead, nose), the auricular localization is extremely rare. Often the hemorrhage may be symmetrical (as in the case reported by the authors), and the intervals of recurrence are irregular. Hematidrosis has not been observed in the male sex. Its relationship to menstruation is well shown by Charvanne's series of 37 cases of otorrhagia, of which only 7 were independent of the menstrual function. Emotional disturbances are usually the provocative factors.

The prognosis is always benign, even though the hemorrhage is frequent and abundant (as in the authors' case).

The hemorrhage ceases spontaneously. Treatment should be directed between attacks to the underlying hemopathic condition.

ED.

THE SURGICAL ANATOMY OF THE SO-CALLED CAPSULE OF THE FAUCIAL TONSIL.*

Dr. G. Hudson Makuen, Philadelphia.

We hear much nowadays about the capsule of the faucial tonsil, and yet I am convinced that few, if any, of us know exactly what the capsule is, how and where it originates, and what is its function. In fact, some of us go so far as to question its very existence. Dr. D. R. Patterson, special throat surgeon to the King Edward VII Hospital, Cardiff, and one who has made a careful study of the anatomy of the faucial region, not only in man, but also in the lower animals, says that the so-called capsule of the tonsil is merely a portion of the intrapharyngeal fascia or aponeurosis having its upper attachment at the base of the skull and extending down into the region of the esophagus, and in confirmation of this belief he quotes freely from the English and French schools of anatomy.

I have been greatly interested in this discussion, because of the importance which the so-called capsule assumes in relation to tonsil operations, and I am strongly inclined to agree with Dr. Patterson in his conclusions.

"Extracapsullar tonsillectomy" is now a common expression, and I myself so far as I know was the first to use the term "intracapsullar tonsillectomy," and to suggest the possibility of the operation and even its practicability.

An intracapsullar tonsillectomy, as I have used the expression, means a tonsillectomy in which the tonsil is entirely removed, while the major portion of the capsule is left in the fauces where it naturally belongs and where it completely lines the tonsillar fossa. On the other hand, an extracapsullar tonsillectomy is one in which the entire capsule is removed, leaving an opening through the intrapharyngeal aponeurosis into the deeper regions of the neck and exposing the superior constrictor, the palatoglossus and palatopharyngeus muscles.

If extra- and intracapsullar tonsillectomies may be performed, it follows that the tonsil must have a capsule or something that passes for one, and the question arises, what is this so-called capsule of the tonsil?

*Read before the Thirty-Seventh Annual Congress of the American Laryngological Association, Niagara Falls, Canada, June 1, 1915.

As I have already intimated, my conclusions are the results, not of the careful embryological and histological studies that the subject requires and of which it is worthy, but only of careful clinical investigations. I am convinced, however, that the capsule does not exist as a distinct entity, like the capsule of the kidney, for example, but, as Dr. Patterson says, it is merely that portion of the intrapharyngeal aponeurosis or pharyngo-basilar membrane into a recess of which the tonsil develops and to the adjacent portion of which it attaches itself with increasing firmness during its development.

It is well-known that the so-called capsule does not surround or completely envelop the tonsil, but it only embraces a portion of its outer surface, sometimes more and sometimes less, depending upon whether or not the gland is submerged or imbedded. A tonsil is said to be submerged when a fold of the intrapharyngeal aponeurosis surrounds it to a greater extent than is usual, separating it from the palatopharyngeus muscle posteriorly and the palatoglossus muscle anteriorly, and the unattached antero-inferior portion of this fold is what is known as the plica triangularis or plica tonsillaris. (See colored plate.)

When we come to make a careful study of the intrapharyngeal aponeurosis or membrane separating the faucial tonsil from the deeper regions of the neck, we find that it consists, not of a single, but of multiple or, at least, several layers of fibrous tissue which may be easily separated the one from the other in somewhat the same way that the layers of an onion are pealed off or separated. The thin inner layer, however, has become so much a part of the tonsil that it is quite impossible to separate the two, but when the separation between this thin inner layer and the deeper layer is begun at any point in the edge of the attachment between the tonsil and the capsule its entire separation is an easy matter, as those of us know who have done the so-called finger enucleation.

An intracapsullar tonsillectomy, therefore, is one in which only a thin layer of the intrapharyngeal aponeurosis or capsule is found adherent to the tonsil after the operation; whereas, an extracapsullar tonsillectomy is one in which all the layers having been torn or dissected out *en masse* are adherent to the tonsil leaving the window resection of the pharyngo-basilar membrane which I have described.

I have been trying for a long time to determine just why in one tonsillectomy we should have so much cicatricial contraction with pharyngeal and palatal deformities, while in another the results are in all these respects comparatively satisfactory, and I think I may

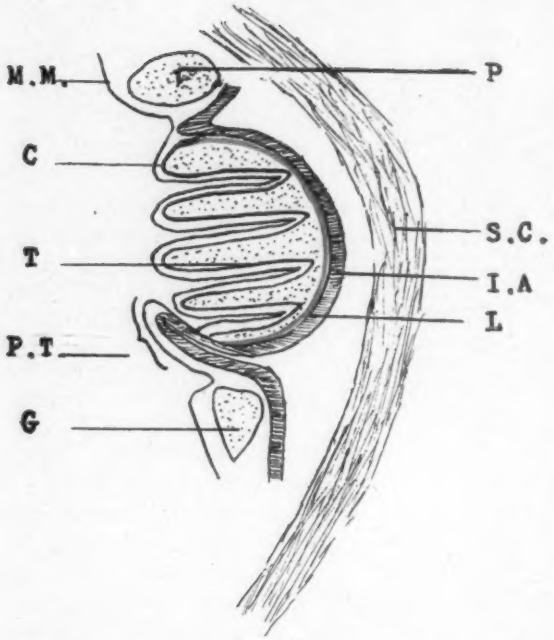


Fig.—Schematic drawing of a horizontal section of the left tonsillar region viewed from above, showing attachment of the tonsil to the intrapharyngeal aponeurosis. P, palatopharyngeus muscle; S C, superior constrictor muscle; I A, intrapharyngeal aponeurosis; L, inner layer of intrapharyngeal aponeurosis firmly adherent to the tonsil; G, palatoglossus muscle; P T, plica triangularis, or fold of the intrapharyngeal aponeurosis; T, tonsil; C, point of cleavage in an intra- or intercapsular tonsillectomy; M M, mucous membrane.

have found the solution to the problem. If we would avoid cicatricial contractions and palatal deformities, we must enucleate the tonsil, not only with the least possible traumatism, but with the least possible capsule, and I think I have discovered that an intracapsullar tonsillectomy, or a tonsillectomy in which the major portion, at least, of the so-called capsule may be left in the tonsillar fossa, is altogether within the realm of possibility.

While making a careful inspection of a series of recently enucleated tonsils, I found that their capsules varied very much, especially in respect to their thickness, and at first I thought this variation was due altogether to the differences in the age of the patients from which the tonsils were taken, the younger ones naturally having tonsils with thinner capsules and the capsules of the tonsils of older patients increasing in thickness with their age, but after making further observations, I found that another factor is operative in determining the character of the capsule and that is the technic of the enucleation. It is a fact, however, as Dr. Patterson has pointed out, that the capsule of the tonsil varies with the age of the tonsil and that it increases in thickness with the increase in the age of the patient. As he very aptly expresses it, "like the larva which spins its own cocoon, the tonsil may be said to weave or, at least, add to its own capsule."

So easily is the tonsil at times pealed out of its bed or pocket in the pharyngo-basilar membrane of very young children, and so thin is its partially enveloping sheath that I have come to regard this sheath or capsule as merely a compressed portion of the subareolar connective tissue in which the tonsil happens to be imbedded and which has not yet attached itself even to the most superficial layer of the pharyngo-basilar membrane. When this kind of enucleation is performed, we have a veritable intracapsullar tonsillectomy, provided, of course, we regard the capsule of the tonsil as being a portion of the pharyngo-basilar membrane to which the tonsil attaches itself.

This particular operation, however, is much more easily performed in young children and before the tonsil begins to appropriate the various layers of the fibrous membrane with which it is in juxtaposition. In the course of the development of the tonsil and of the individual in whose possession the tonsil is, a closer and closer union takes place between the tonsil and its adjacent membrane, and this closer union is the result of physiological as well as pathological processes. The tonsil actually seems to grow fast to the membrane, each apparently giving to the other something of its own particular

substance, and this process is naturally favored by the pathological inflammatory conditions to which this region is subject.

Even muscular fibers are found binding the so-called capsule to the substance of the tonsil, and these fibers appear to come, not from the surrounding muscles of the fauces, but rather from the aponeurosis itself, giving to it the character of a musculo-fibrous sheath rather than a purely fibrous one.

The blood supply of the tonsil passing through the intrapharyngeal aponeurosis also tends to bring about a still firmer union between the tonsil and its capsule, and in the course of the so-called atrophy of the tonsil which only reaches its fullest development in somewhat advancing years, the remnant of the tonsil and the adjacent fibrous layers of the pharyngo-basilar membrane become firmly agglutinated, making of them, as someone has suggested, a strong wall of defense for this region of the pharynx.

If the theory herein advanced relative to the capsule of the tonsil is the correct one, it would seem to have a very important bearing upon the surgery of this region. There is probably no other operative field in which so many different kinds of surgery have been suggested and tried. In fact, nearly every operator has his own particular technic, and to him at least no other technic appears to be quite satisfactory.

There are good surgeons who still adhere to the sharp dissection method of removing tonsils, but if the tonsil's setting in the pharynx is what I have described it to be and what I believe it to be, there is absolutely no necessity for the use of a sharp instrument in the performance of this operation except in those extremely rare instances in which there are pathological adhesions between the tonsil and the free borders of the adjacent pillars, because in uncomplicated cases there is nothing to cut except only the thin mucous membrane that is reflected from the pharyngeal wall over the inner surface of the tonsil, and this can be separated from the tonsil more readily and more accurately by some form of snare, the wire of which being made to adhere closely to the surface of the tonsil during the enucleation.

Notwithstanding the many tonsil operations which have been recommended, I am venturing to suggest another one, or at least a modification of one, which seems to me to enucleate the tonsil more easily, with less damage to the surrounding parts, and what is of greatest importance with less of the so-called capsule of the tonsil than most other operations which have been suggested, and I think I have tried them all.

In the first place, let me say that one of our own fellows, Dr. Greenfield Sluder, in his modification of the old Physic tonsillotome has given to us an instrument that is more generally useful and practical in tonsil enucleations than any other of which I have any knowledge, and in the hands of one who knows how to use it, I can see no possible objection to it. The original Sluder instrument, made in its lightest form, is the one which I use for picking the tonsil out of its bed in a recess of the intrapharnygeal aponeurosis, and once having the tonsil grasped within the fenestra of the instrument the blade being exceedingly dull, I slip a snare over the tonsil on the inside between the tonsil and the instrument and slowly squeeze the tonsil out of its bed, leaving all the so-called capsule except the thin innermost layer, which is inseparably adherent to the tonsil and all the mucous membrane except that which covers the inner surface of the gland itself.

This operation is usually done in about eight minutes, two of which are used in picking the tonsils up out of their beds and engaging them within the fenestra of the Sluder tonsillotome, and the other six in slowly drawing the wire through the so-called stumps of the tonsils. The operation requires three instruments, a medium-sized Sluder tonsillotome with dull blade, a snare, and a light forceps for grasping the tonsil before it is entirely enucleated.

The advantages of this technic may be summed up as follows: The operation is very quickly performed, all the instruments are simple, easily manipulated, and easily cleansed, and if a sufficient time is taken for drawing the wire through, practically no bleeding follows the operation. Another great advantage is one which I have already suggested, namely, that the wire is in such close approximation to the tonsil that when the operation is finished the major portion of the capsule remains as a lining for the tonsillar fossa, protecting the surrounding muscles and serving as a wall of defense against cervical and even general infection.

It is not claimed that equally good tonsil operations may not be done by other forms of instrumentation, but this method in my own hands has not only been more satisfactory but it has given far better results.

The same operation may be done with the Beck modification of the Sluder instrument, in which a wire is concealed within the rim of the fenestra, but I have given that method up because of the trouble in getting and keeping the wire within its groove, and, furthermore, the wire, being a little more distant from the tonsil, does not hug it so closely, and, therefore, it may in some instances remove more

than the single layer of the capsule. The advantage of the snare over the blade of the instrument itself as a means of finally separating the tonsil is that the use of the snare reduces the final area of the separation to a mere point, whereas this area when separated by the blade of the instrument is a slightly curved line; and another very practical advantage is that by the use of the snare there is scarcely any bleeding at all, whereas the bleeding by the use of the Sluder instrument alone is often very profuse.

It is not the operative technic, however, that I desire especially to emphasize in this communication but rather the anatomical conditions which seem to make careful and precise surgery of the faucial tonsil an absolute necessity.

I may say also that the anatomy of the capsule of the tonsil and the so-called plica triangularis which I have described differs not from that described in 1912 by our colleague and fellow, Dr. Fetterolf, except that he seems to regard the capsule as a distinct entity rather than as being only incidentally a portion of the tonsil, and as a result of this misconception, as it seems to me, he advises beginning the incision or separation for the enucleation of the tonsil anterior to the plica triangularis or at a point between it and the anterior pillar. Such an enucleation, of course, according to the views which I have expressed with reference to the anatomy of the capsule would almost of necessity result in a window resection of the intrapharyngeal aponeurosis, the opening up of the cervical region to infection, and the post-operative contractions and adhesions which we all deplore and try to avoid.

Whatever may be the technic of the operation, the incision or separation should begin behind the plica triangularis and all except perhaps a portion of a very large plica should remain in the fossa where it serves to some extent at least as a mechanical substitute for the tonsil itself.

SUMMARY AND CONCLUSIONS.

The so-called capsule of the faucial tonsil is not a capsule at all in a strict sense of the term, and it consists in part, at least, of that portion of the intrapharyngeal aponeurosis in a recess of which the tonsil attaches itself in the course of its development.

The intrapharyngeal aponeurosis is a broad membrane having its attachment above to the base of the skull, and extending downward it not only separates the tonsil and the palatal pillars from the superior constrictor muscle and other important tissues in the cervical region, but folds of this membrane protrude themselves between the

tonsil and the pillars of the palate; the anterior fold when it protrudes itself well in front of and below the tonsil constitutes what is known as the plica triangularis or plica tonsillaris.

In the course of its development in embryo and during infancy, the tonsil appears to appropriate a portion of the connective and musculo-fibrous tissue with which it is in juxtaposition and finally in adult life it becomes firmly attached to this membrane to which has been given the name intrapharyngeal aponeurosis, and a section of which seems to constitute the so-called capsule of the tonsil.

A complete extracapsullar tonsillectomy, therefore, must leave a window resection of the intrapharyngeal aponeurosis, not only exposing the palatal pillars and the superior constrictor muscle but opening up avenues of infection in the deeper regions of the neck.

A more desirable operation which may be called an intracapsullar tonsillectomy, or perhaps better still an intercapsullar tonsillectomy, is one in which the tonsil is removed with only the thin innermost layer of the capsule, the major portion of it being left in the pharynx as a complete lining for the fossa, where it serves as a strong wall of defense against infection in this region. This intra- or intercapsullar tonsillectomy may be done easily and accurately with an ordinary snare in connection with the original Sluder instrument.

1627 Walnut Street.

Physiology of Audition. CLEMENT, *Rev. hebd. de. Laryngol.*, May 16, 1914, p. 592.

At the age of 12, patient had diphtheria which destroyed membrana tympani and ossicles. For two years thereafter he could not hear, but bone-conduction remained. Then gradually he again heard the voices of his friends and later also perceived deep tones. Now his hearing is restored except that he cannot hear the auscultation sounds of the heart or lungs, or the voices of women over the telephone. In addition the patient notices that occasionally when listening to an orator who moves to and fro that the voice is entirely lost and then immediately heard again. The patient can also note localized sounds. ED.

SOME FACTS NOT GENERALLY UNDERSTOOD ABOUT OIL-ETHER COLONIC ANESTHESIA.

DR. JAMES T. GWATHMEY, New York City.

Whenever any new anesthetic agent or method is introduced, of necessity some one surgeon's name stands out prominently in connection with it either as the originator or as assisting in establishing it upon a permanent basis by its successful application in a large number of cases. Thus, the name of the Mayos will always be associated with the drop method of administering ether; that of Dr. Martin Ware with ethyl chloride; those of Dr. Elsberg and Dr. Peck with endotracheal anesthesia. So, also, the name of Dr. Hubert Arrowsmith, of Brooklyn, will always be associated with oil-ether colonic anesthesia, he having now used it successfully in over two hundred consecutive cases. He employs this method exclusively for suspension laryngoscopy, bronchoscopy, esophagoscopy, etc.

Its principal advantage over local anesthesia in this field is that the patient does not "crawl" as the instrument is introduced, nor is the focus liable to disarrangement at any time. Dr. Cantle, of Mamaroneck, reports over one hundred successful cases operated upon under this method, the majority of the patients being children. Dr. Walter Lathrop, of Hazleton, Pa., has operated upon over one hundred consecutive cases of goiter under this method. The technique he employs is a distinct advancement, inasmuch as he never uses *over* six ounces, or over a 65 per cent. solution. Dr. Lumbard, of the Harlem Hospital, reports over one hundred and fifty cases in various operations. Other physicians report its satisfactory employment in fifty to one hundred cases, the total number now being considerably over a thousand.

It is now a well-recognized and approved method of anesthesia, and is so acknowledged by the many who have taken the trouble to thoroughly acquaint themselves with its technique. It is steadily gaining new adherents, but it still remains for some hospital to show its confidence in the method by adopting it either as a complete procedure or as a preliminary supplement to other methods.

The history, animal experiments, preparation of patients, physiology, technique, indications and contra-indications of oil-ether colonic anesthesia have been outlined by the writer and others in previous papers, and a review is therefore unnecessary. It is proposed at this

time to devote especial attention to certain factors which have been overlooked heretofore, or have received only superficial attention, and which consequently are but little understood. It is possible that lack of understanding of these factors has retarded the general adoption of this method more than anything else.

These factors are:

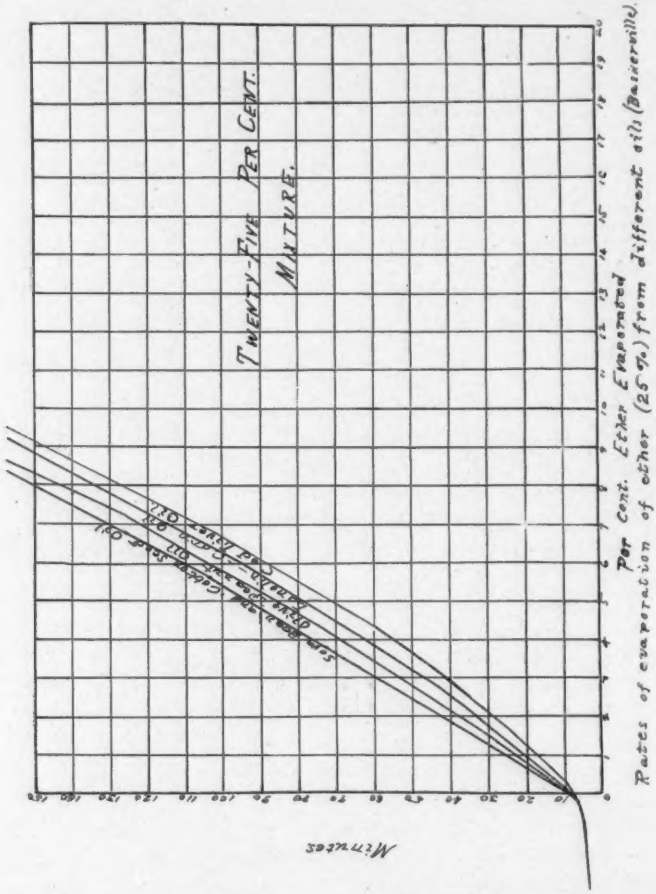
1. The total amount of ether given at one time.
2. Quantity used.
3. Temperature.
4. Toxicity.
5. Special indications.

1. It is necessary to give at one time the total amount as determined by age, weight, and general condition of patient, in order to establish the ether tension in the blood which is necessary to produce anesthesia. If given by the Murphy drop method, there is an unnecessarily prolonged second stage, as there is not sufficient free ether to establish anesthesia. This may not apply to children, or to adults who have received sufficient morphine and chloretone, or other preliminary medication before the oil-ether administration. It is a fallacy to presume that the total amount given to a patient is immediately utilized. If this were so, there would be shock and gradual recovery with every oil-ether administration. Shock is produced only when the administration is improperly conducted. When oil-ether is given by fixed rules, now well understood, it is physically impossible to shock the patient, either at the time of introduction or during the anesthesia.

2. Quantity: The total amount used compares favorably with that employed in all other methods of administering ether. Six ounces of ether with two ounces of oil, given to a patient weighing 160 pounds or more, will last nearly three hours. As the plane of anesthesia is constant, the patient is absorbing about two ounces of ether per hour. Only one other form of anesthesia requires so small an amount, i. e., intravenous anesthesia, which averages one and a half ounces of ether per hour. The drop method is variously reported as requiring from four to six ounces per hour; and the endo-tracheal method requires six to eight ounces per hour, or more than any other method.

After administering the oil-ether mixture, it is impossible at any time to withdraw the oil and leave the ether; or to withdraw the ether and leave the oil. Every molecule of ether is bound to a molecule of oil, and this union is broken only when vaporization occurs. In no other way can they be separated. When anesthesia is established, it is automatically maintained by the ether separating

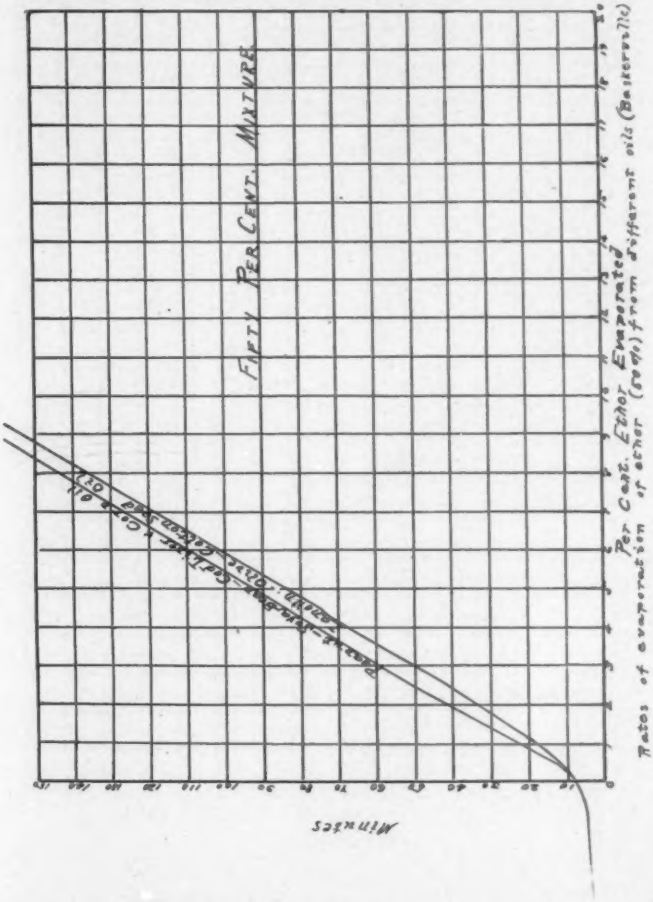
from the oil, according to certain inflexible physical laws. The amount of this vaporization per minute never varies. Therefore, it is impossible to have a deep anesthesia at one time and a light anesthesia at another, unless the anesthesia is deepened by rebreathing or lightened by an air-way tube. The anesthesia can be con-


Twenty-Five Per Cent. Mixture.
Per Cent. Ether Evaporated
Rates of evaporation of ether (25%) from different oils (Baisersville).
Minutes

cluded at any time by placing a large rectal tube in position and massaging over the colon from right to left. If a mistake in judgment is made as to the amount, in the first place, it is manifested within fifteen minutes and is easily corrected at this time by withdrawing the unnecessary amount. Thus the administration is as

definitely under the control of the anesthetist at all times as if he were giving it by an inhalation method.

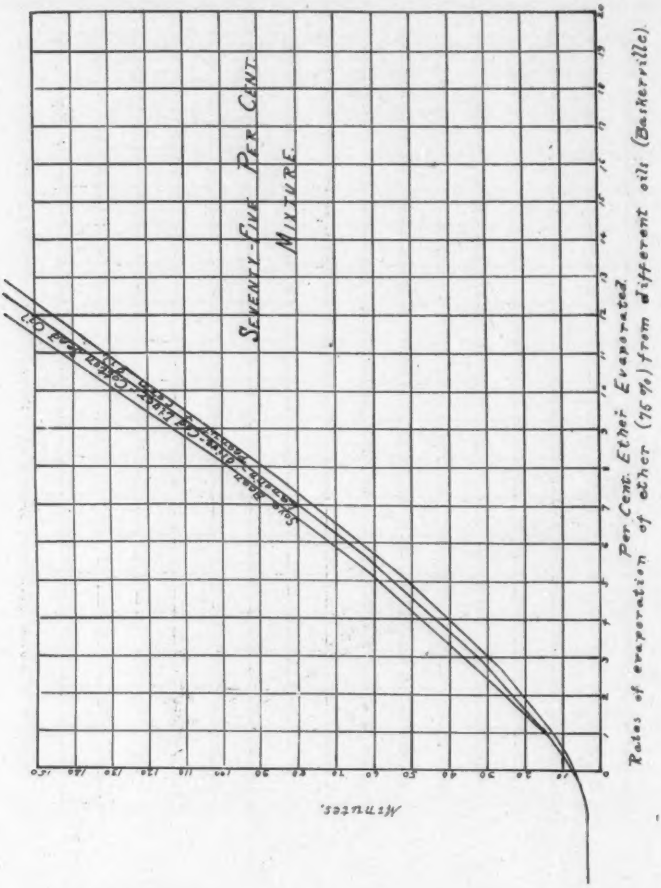
In order to be assured that the patient under oil-ether anesthesia is as safe as with any other method, one must thoroughly understand the physical laws already referred to. The accompanying charts,


Fifty Per Cent. Mixture
Per Cent. Ether Evaporated
Rates of evaporation of ether (50%) from different oils (Baskerville)
Minutes

made by Professor Baskerville, in the chemical laboratory of the College of the City of New York, illustrate these laws very clearly.

Regardless of the fact whether corn, cotton-seed, peanut, cod-liver, lanolin, soya bean, or olive oil is used, or whether it is a 25 or 50 or a 75 per cent. mixture, it will be seen that the rate of evap-

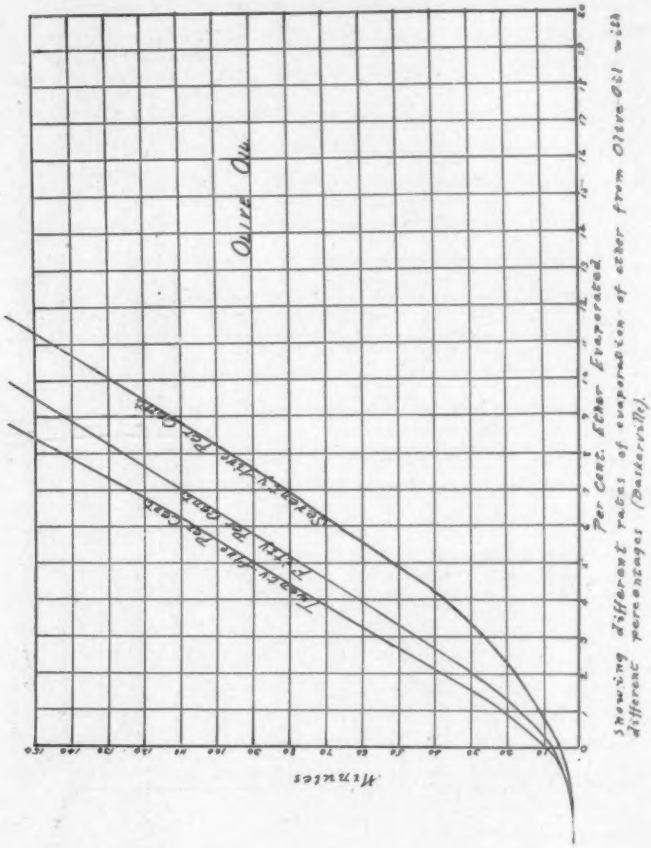
oration is *constant*. If, instead of a test-tube, the mixture is placed in a vessel with increased surface area, the evaporation is still constant, although the rate is increased. This fact insures a smooth, even anesthesia at all times.


Seventy-Five Per Cent. Mixture.
Minutes.
Rates of evaporation of ether (75%) from different oils (Baskerville).
Per Cent. Ether Evaporated.

The work of Baskerville is invaluable in assisting in the placing of oil-ether colonic anesthesia upon a firm and scientific basis. In connection with clinical experience, the charts prove conclusively that while the **total** amount of the mixture is within the body, the patient is as safe from an overdose as if it were in a container out-

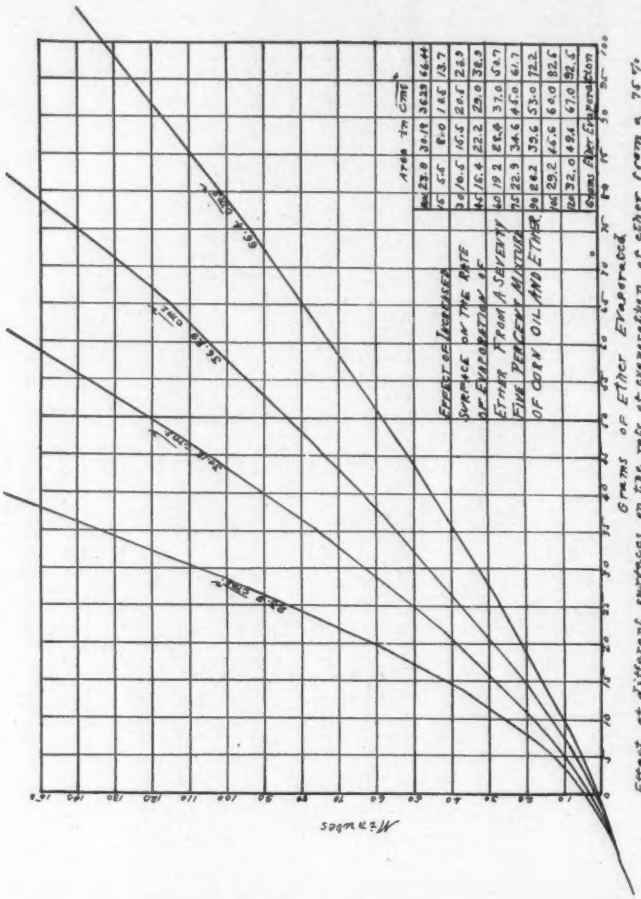
side of the body. The assurance these charts convey makes unnecessary any auxiliary containing apparatus.

3. Temperature: All the text-books on pharmacology, physiology, and surgery, state that in anesthesia produced by ether there is a general lowering of the body-temperature. As loss of heat is one


Olive Oil
Showing different rates of evaporation of ether from Olive Oil with different percentages (Baltzerville).
Per Cent. Ether Evaporated
Minutes

of the factors that enters into surgical shock, and as surgeons have noted that the oil-ether-colon is cold even through a rubber glove, the question might be asked whether a possible temperature loss might not be an added element of danger. Furthermore, is not this method directly opposed to the theory underlying the administration of warmed anesthetics?

Paradoxical as it may sound, the patient under oil-ether colonic anesthesia inhales a warm, moist vapor at all times. When the ether is taken up by the small blood-vessels surrounding the colon, it is carried thence through the liver by the greater circulation, and on to the heart; from there it is pumped into the lungs. By the time


Effect of different surfaces on the rate of evaporation of ether from a 75%
mixture with Corn Oil (Buttersville).
Grams of Ether Evaporated
Grams After Expiration
Area in C.M.
Effect of Increased Surface on the Rate of Evaporation of Ether from a Seventy Five Percent Mixture of Corn Oil and Ether

the anesthetic has reached the lungs it is moistened and thoroughly warmed to the body temperature. There is no irritation to the lungs, and mucus and saliva are usually absent.

The frigid condition in the colon is caused by the evaporation of ether from the oil, and is the principal factor in the automatic

regulation of the anesthetic. When the anesthesia is once established, the temperature of the ether-containing colon varies as follows: As the mixture approaches body temperature, ether vapor is given off, which cools the mixture and retards evaporation. This process recurs automatically until all the ether has parted from the oil. During this time, the temperature of the patient remains normal, as determined by a thermometer placed in the mouth or axilla. The skin is warm to the touch; the color of the face suggests thorough oxidation all the time. The cold, clammy sweat, often noticed with ether given by other methods, does not occur with oil-ether.

4. Toxicity: Quiet respiration (so natural that not even the alae of the nose move, indicating that there is no strain upon the respiratory center at any time), normal pulse, and good color during the anesthesia indicate that no toxic condition exists.

If the mixture is withdrawn and the anesthesia so terminated, the anesthetic stage merges into one of deep sleep, from which the patient gradually awakens as from a natural slumber. The absence of nausea and vomiting in the large majority of cases, with no change in the urine or blood; the fact that ether vapor colonic anesthesia was used clinically by Sutton and Brewer for patients with impaired organs; and the further fact that oil-ether colonic anesthesia is now being used in one hospital *only* in desperate cases in which inhalation anesthetics might be dangerous, would indicate that there is less toxicity in connection with this form of anesthesia than with the usual inhalation methods.

5. Special indications: On the other hand, for certain subjects and operations, oil-ether colonic anesthesia is the safest and best method, considered from every point of view. It is especially indicated for the very obese, regardless of the nature of the operation, both on account of the narrowed air-passages of these individuals with consequently more or less trouble with all inhalation methods, and because of the affinity of fats for ether.

It is the best of all methods in the surgery of the upper air-passages. Here the anesthetist can assist the surgeon by using a suction apparatus for blood, without at the same time lightening the anesthesia by withdrawing ether vapor, as would be the case with all inhalation methods, except endo-tracheal anesthesia. It is preferable to this last mentioned method, as, in the writer's opinion, this method should never be used except when positive pressure in the lungs is needed.

In a suspension laryngoscopy, bronchoscopy, and gastroscopy, the patient under oil-ether anesthesia is further safeguarded by having a

clear passage for the exit of the ether vapor at all times. This airway, while acting as an additional safeguard to the patient, does not lighten the anesthesia sufficiently to cause trouble. The introduction of the instrument absolutely insures against the possibility of the anesthesia being deepened.

A general hospital could readily utilize a salvarsan apparatus for the routine administration of this method. The apparatus could easily be connected to the rectal catheter placed in situ. Directions could be given to administer the mixture in such a way that the anesthesia would fall a little short of the third or surgical stage, and this could always be supplemented by a few drops of ether on a mask to get the required anesthesia. It is obvious that the partial analgesia so secured forms the best preparation for local anesthesia. A number of patients could thus be prepared in succession and the time of surgeons, physicians, and nurses in the operating-room would be conserved, while the waiting patients themselves would be spared the mental distress and strain now so common.

40 East Forty-first Street.

Sarcoma of the Tongue. W. T. COUGHLIN, *Jour. A. M. A.*, Jan. 23, 1915.

From a study of the fifty-eight cases recorded in the literature since 1885, and from his own two cases of sarcoma of the tongue, Coughlin does not believe that the affection is more frequent in young children and that it may be pre-natal in origin. As a matter of fact, the records in the cases studied by him show that it is more frequent in adults. In but ten of the cases was there a history of previous trauma of the tongue, irritation from broken teeth, etc. The site of predilection seems to be on the right side and towards the base and usually on the upper surface. Of the fifty-eight cases, nineteen were of the spindle-cell variety; the others were round-cell sarcomata. The symptomatology consists of soreness, the feeling of the presence of a foreign body, bleeding, accumulation of mucus. Treatment should be operative and as early as possible.

ED.

BRAIN INFECTION OF OTIC ORIGIN, WITH REPORT OF FIVE CASES.*

DR. J. W. MURPHY, Cincinnati, Ohio.

That every case of suppurating ear is a menace to the owner is well illustrated in the series of five cases which I have seen in the past year, and wish to report to-day.

These cases are interesting. (1) From the slight symptoms present up to within a few hours of the time of operation; (2) in every case we were able to trace the origin of infection to a lesion in the middle ear, in three of the operated cases, at the time of the operation, and in the two non-operative fatal cases at a subsequent post-mortem.

The portion of the brain most likely to be involved from middle ear infection depends often upon the manner in which the infection occurs. My experience has been that when it occurs by direct continuity, the temporo-sphenoidal lobe is most often the site of the abscess. When the extension is through the labyrinth, the abscess is most often on the anterior aspect of the cerebellum for the abscess is most often found adjacent to the infected bone area.

Diagnosis: Since abscess of the brain of otic origin is a secondary, and not a primary disease, the problem of diagnosis is often masked by the primary disease, or some of its complications. Quite a large extra-dural abscess may be present with little or no symptoms. Cerebral abscess of otic origin, being an acute infection, the time is generally too short for the pathognomonic eye symptoms to develop, as is the case in tumors of the brain, hence the absence of optic neuritis does not exclude cerebral abscess.

Paralysis is of importance in helping to locate the abscess, since the lesion must lie in the zone of inflammatory tissue, near the center for the muscles involved.

The section through this wet specimen shows the most usual site of the abscess when of otic origin.

The section through the pons is at the site of the aqueduct of Sylvius. Now, it is at this point that the third nerve has its deep origin on either side of the aqueduct of Sylvius, and passes out on the side of the red nuclei, just a little anterior to the aqueduct.

This shows clearly how an abscess of the temporo-sphenoidal

*Read at the Chicago Meeting of The American Laryngological, Rhinological and Otological Society, June 15, 1915.

lobe would soon exert pressure on the deep origin of the third nerve, causing paralysis of the group of muscles controlled by this nerve, which is one of the earliest symptoms of a temporo-sphenoidal abscess.

Paralysis of the third nerve on the side of the suspected abscess is an important diagnostic symptom. The paralysis is rarely complete. If the pupil on the side of the suspected abscess fails to respond to light, the diagnosis is rendered more certain. The mental symptoms may simulate those of opium poisoning, and when met with in the presence of a purulent otitis media, must always arouse suspicion of brain complications.

With a temperature nearly normal or slightly sub-normal a slow pulse, slow respiration, slow cerebration, and want of sustained attention, mental obscuration, and a tendency to dose even when talking, all point strongly to a cerebral abscess.

When the abscess is in the cerebellum, the respirations are much slower than when it is in the temporo-sphenoidal lobe, and is more apt to be irregular, and of the Cheyne-Stokes character. In cerebellar abscess with pressure on the pons, respiration may cease some little time before the heart stops.

Treatment: An abscess of the brain must be dealt with surgically, the same as an abscess in any other part of the body. Once the diagnosis is made and the quicker the abscess is evacuated, the better the prognosis.

The incision should be planned so as to provide for free evacuation and drainage afterwards. I feel that these operations should consume as little time as possible, when once the brain is exposed.

When the abscess to be opened is situated some distance from the dura, I prefer a perfectly sharp, long "Weis" cataract knife for making the incision through the intervening brain substance. The blade is so sharp that it readily pierces a tough capsule, and is so thin, that the minimum amount of trauma is produced. Once the abscess is located, it can be more freely opened by means of a fine artery forceps.

The abscess should be adjacent to the infective bone area, and the incision should be made in this direction.

Case 1: Mr. C., aged 63, was seen March 4, 1914, by Dr. J. O. Blackerby, of Montgomery, Ohio, with the following history: After an exposure during one of the recent blizzards, he complained of some soreness in the neck and back of the right ear, but it was not of sufficient severity to cause him to consult his family physician, and he continued at his work, thinking the trouble was only due to

a cold and would soon pass off. At no time was there any discharge from the ear.

When I saw the case the following day, there was marked edema of the tissue over the mastoid, and the swelling extended into the neck, suggesting the presence of a Bezold abscess. At the first glance, the appearance of the mastoid with no discharge from the ear, suggested a possible furunculosis of the auditory canal. Examination showed the canal to be normal, and the middle ear dry, but some evidence of an old chronic non-inflammatory middle ear trouble. Temperature, 102° F., and considerable pain complained of in the neck along the tendons of the sterno-cleido-mastoid muscle, with some tenderness at the tip, a diagnostic point in extra-dural abscess.

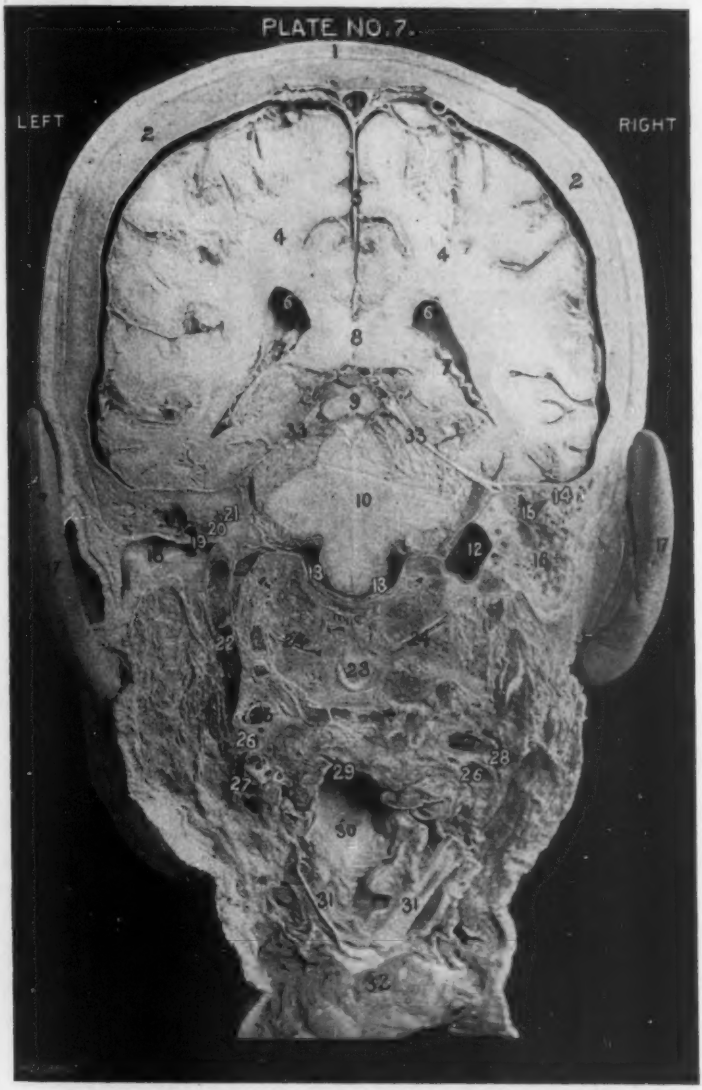
To my surprise no pus was encountered in my incision over the mastoid, and not until the entire tip was exposed was the real seat of the trouble encountered. In the under surface of the mastoid tip there was a perforation about the size of a lead pencil, which opened into a large abscess at the tip. The pus had traveled along the tendons of the sterno-cleido-mastoid and produced a typical Bezold's abscess, containing several ounces of thick, creamy pus. While the outer surface of the mastoid was intact, the entire pneumatic process was one mass of necrosed cells and pus. The lateral sinus was exposed and found covered with granulations, while a large opening in the tegmen tympani communicated directly with the dura, through which quite a quantity of extra-dural pus escaped when the opening was enlarged and the dura depressed.

The bone destruction was quite extensive, and a strange feature of the case was that with all this destruction and pus in the mastoid, there were no symptoms of the process in the middle ear. This absence of middle ear suppuration was explained by the presence of firm granulations in the attic completely shutting off communication with the middle ear. A radical mastoid had to be done and the patient made a satisfactory recovery. The Bezold's abscess had to be opened low down in the neck and drained. The clinical symptoms were so slight that the patient refused to consult his family physician till the day before he was operated upon.

Case 2: John N., a large, well-developed boy, 15 years of age, was seen in consultation with Dr. John R. Murnan and Dr. R. W. Bledsoe, of Covington, Ky., March 15, 1915. He gave the following history: Six weeks ago, following an exposure, he complained of pain in the left ear. He consulted his family physician, Dr. Murnan, of Covington, Ky. The doctor ordered a hot boracic acid douche

and gave him a laxative. The next day the ear began to discharge and the pain ceased. Under this treatment the discharge gradually lessened, and in about ten days ceased and the parents considered the ear well. After remaining dry for a week the discharge suddenly began again and has continued ever since, in spite of a free myringotomy by Dr. Bledsoe. No pain was complained of over the mastoid, and at no time was there swelling or any external symptoms of the inflamed mastoid. About the only pain complained of was located over the left temporal region and the left frontal sinus. Examination of the frontal sinuses was negative, yet the symptom simulated a violent sinusitis. The pain was worse at night. For the past two weeks it has been almost impossible to get his bowels moved, and expulsive vomiting, which was present, was attributed to the drugs used to overcome the constipation, which was most pronounced. The boy was able to be up and about, and was in Dr. Bledsoe's office for treatment, March 14, 1914. In the afternoon, the following day, March 15, the boy suddenly had a convulsion and became unconscious. I saw him that evening for the first time in consultation. The patient was profoundly unconscious. The left external canal was full of mucus-like pus. There was a free opening in the anterior portion of the drum, a slight sagging of the superior-posterior wall of the canal near the drum. There was a slight dropping of the left eye-lid, and the eye turned to affected side. The pupil of the left eye was dilated and failed to respond to light. The right pupil was normal, but sluggish. A diagnosis of localized acute meningitis was made, and opening and drainage of the mastoid advised. Before the patient could be taken to the hospital, the symptoms grew rapidly worse, and the patient died early the next morning without having regained consciousness.

We were fortunate in getting a post-mortem in this case. We found the petrous portion of the left temporal bone much darker than the right, with several areas of roughened bone, showing the point of meningeal infection. The entire petrous portion of the bone was filled with pus and broken-down bone cells. Since, for the past week, the pain complained of was over the left temporal region, extending up over the left frontal, this cavity was opened and found to be normal. The tegmen tympani was also eroded. The left temporal lobe was much discolored but no abscess was present, but a local, well-defined acute meningitis of the left temporal lobe was present, which accounted for the intra-cranial symptoms; expulsive vomiting, obstinate constipation, Jackson's epileptic seizures and paralysis of the third nerve.



Section through brain showing the most frequent location of abscess of otic origin.

Case 3: John R., aged 6 years, was seen in consultation with Dr. Bledsoe, July 3, 1914. He gives the following history: Three weeks ago the patient had symptoms of mastoid involvement following a discharging ear of recent origin. As there was evidence of pus under the soft tissue over the infected ear, the family physician incised same and evacuated a sub-periosteal abscess.

The ear continued to discharge and two weeks later Dr. Bledsoe did a simple mastoid operation.

The patient did well for one week, when he developed symptoms of cerebral complications.

When I saw the case, the child was comatose, with slow pulse, slow respirations, pupils widely dilated, and the eye on the side of the lesion turned outward.

A diagnosis of temporo-sphenoidal abscess was made, and an unfavorable prognosis given. Operation was immediately decided upon.

After removing a button of bone from the temporal region, one inch above and slightly in front of the external canal (auditory), there was pronounced bulging of the dura with no pulsation and a fluctuating sensation on palpation.

A crucial incision was made in the dura, and the underlying brain substance exposed.

The brain seemed softened, but no evidence of abscess was present at this point.

A fine Weis cataract knife was passed in about one and one-half inches downwards and forwards, when it encountered an enormously enlarged encysted abscess of the temporo-sphenoidal lobe. The pus was under such tension, that when incised it spurted fully three inches above the wound. Many bubbles of gas escaped with an audible noise, during the discharge. The wound was enlarged with artery forceps, inserted closed, and then opened. Fully four or five ounces of most foul-smelling pus was evacuated. The wound was packed with gauze and the dura sutured.

The pulse, which was only fifty before the incision, immediately arose to 115, and the pupils became active, and by the following morning the paralysis had disappeared, and consciousness had returned.

There was considerable hernia cerebri for a week or two, as the intervening brain substance seemed almost liquid. However, by firmly bandaging the wound each day, this gradually subsided, and the little patient made a rapid convalescence, and now seems entirely recovered, almost a year after the abscess was evacuated.

Case 4: Leroy B., age 7, was first seen October 10, 1914, having been referred by Dr. Larkin, of Hillsboro, Ohio. He gave the following history: In December, 1913, he was operated upon for abscess of the right ear by another surgeon, but the wound back of the ear has never healed. It continued to discharge a very foul-smelling pus, and it was this discharge and foul smell that caused them to seek relief.

Some five or six weeks before, the child had had what the mother called a convulsion, lasting for about fifteen minutes.

At times the discharge would almost cease, when the child would become restless and complain of pain over the ear and the corresponding frontal sinus. There would then be a free discharge of foul-smelling pus, when all of the symptoms would disappear. The child seemed normal in every other way and was a regular attendant at school. There were absolutely no symptoms of brain infection.

The external ear was dry, the drum normal in appearance and hearing about normal.

Thinking that we simply had a sinus to deal with, and possibly an area of necrosed bone that needed curetting, an anesthetic was given and the wound opened.

In opening a mastoid wound for the second time, where I have not done the original operation, I make it a rule to go some distance outside of the original incision, so if dura or sinus have been exposed, there is less danger of wounding the same. The wisdom of this precaution was well illustrated in this case. To my surprise, I found that neither the antrum nor a single mastoid cell had been opened, but that a button of bone about the size of a silver half-dollar had been removed from the temporal bone. Through this bone-opening there was a tense, bulging, nonpulsating dura protruding. I opened the antrum and found evidence of an old mastoid inflammation, but no pus.

Feeling certain that we were now dealing with a temporo-sphenoidal abscess, the bone-opening was enlarged slightly downwards, so as to get better drainage.

A thin Weis cataract knife was then passed downwards and forwards, keeping about half an inch from the inner wall of the skull.

About one inch from the opening a tense yielding mass was encountered. Slight pressure on the knife caused it to enter an abscess from which pus gushed with such force as to cover the hand holding the knife. Artery forceps were inserted along the blade of the knife, and opened, when fully four ounces of most offensive

pus was evacuated. There seemed to be much gas in the discharge, which at times, would come away with quite a bubbling sound.

The cavity was washed out with a normal saline solution and packed with gauze.

Since there was no other source of the diffuse discharge which had been complained of for months, I feel certain that it all came from the encysted abscess which would leak externally when the pressure became too great. This leakage was no doubt the salvation of this little patient.

We were not troubled with hernia cerebri as the dura, pia and arachnoid were firmly bound together, and as small an incision as was compatible with proper drainage was made.

The child made a rapid convalescence. He seems to be entirely well now, and has taken up his school work once more.

Case 5: John S., age about 35, a strong, powerfully built man, was brought to the Cincinnati Hospital about midnight, November 22, 1914. He was in a profoundly comatose condition and no history was obtainable.

Dr. Hinnan saw the case first, and I was asked to see him in consultation the following morning.

I asked Dr. Baer, the neurologist, to see the case also.

We found the patient profoundly unconscious, pupils contracted, and not responsive to light, corneal reflexes abolished. Temperature 99, pulse 190, respirations stertorous, examination of urine negative.

Over the right mastoid there was an old scar, of a former mastoid operation, and there was pus in the right external auditory canal.

An immediate operation was decided upon, and the patient prepared for the same. A few moments after being placed on the operating table, and before the operation could be begun, the pupils suddenly dilated, respirations stopped, and, in spite of artificial respiration and the use of the pulmotor, the heart stopped.

I quickly removed the necrotic mastoid cells and made an opening through the tegmen tympani, incised the dura and opened into a large temporo-sphenoidal abscess.

From the amount of cerebral fluid that came away with the pus, I am satisfied the sudden torpor that came on was due to the abscess bursting into the lateral ventricle on that side.

These five cases of brain infection have been seen in the past year, and, in every case, we were able to demonstrate positively that a suppurating middle ear was the direct cause of the brain infection.

Union Central Life Building.

SPINDLE-CELL SARCOMA OF THE NASO-PHARYNX.*

Dr. Henry B. Orton, Newark, N. J.

G. C., male, age 50. Family history, negative; personal history, negative; Wassermann reaction, negative. I first saw the patient August 27, 1914. He complained that he could not breathe through his left nostril and of pain in his left ear.

Seven months previous to his first visit he had had considerable pain and enlargement of some glands on the right side of his neck. His physican ordered some local treatment, which seemed to relieve him slightly, but he still complained of pain in his left ear. In addition to his inability to breathe through his left nostril and the pain in his left ear, the patient also complained of pain in the occipital region and some pain on swallowing. He had lost fifteen pounds in seven months. He had never had any attacks of epistaxis, or any discharge or odor from his nose.

On examination, nothing in the left nostril was found to account for the obstruction, but on post-rhinoscopic examination I saw a growth about the size of a hazel nut, pale pink in color, bleeding freely on the slightest touch, completely blocking the choana on the left side. The growth seemed to spring from the vault of the naso-pharynx, and the age and the history of the patient led me to the conclusion that the growth might be malignant.

With an adenotome I removed a large piece for examination. This proved to be a small spindle-cell sarcoma. The bleeding was rather profuse for a time but not alarming. On September 12, 1914, with the patient under ether, I curetted the entire vault of the naso-pharynx. The bleeding was stopped by post-nasal plug. The scrapings were examined and the same diagnosis made.

From the time of the operation until October 16, he was free from pain, but on that date he came to me complaining of pain in his left ear and over the tip of the mastoid, occipital region, and on the top of his head. Sometimes, he said, he had pain radiating from the neck to the shoulder which he characterized as if he had been stuck with a knife. He had no fever, and the glands on the right side of the neck were very much reduced in size and freely movable beneath the sterno-mastoid muscle. A small gland was noticed on the left side in the same region.

*Presented before the Nose and Throat Section of the Academy of Medicine of Northern New Jersey.

On November 18, 1914, the patient returned, stating that he thought his nose was becoming obstructed again, and that his eyes and ear were paining him. On examination of the left nostril I saw a small piece of the growth on the anterior wall of the sphenoid. I had his eyes and blood examined. The blood showed a mild secondary anemia. The examination of his eyes did not reveal anything. The ear showed a retracted and lusterless drum.

December 16, 1914, the growth and the glands were very much larger; the pain was so severe that he could not sleep. The patient would not listen to any further operation, so I injected one-tenth minim of Coley's serum in the pectoral region. He received the serum three times a week with increasing doses until January 24, 1915, when he was getting 1 c.c. with a reaction of 104.° He always felt fine after the reactions. The growth does not seem to be any larger and his pain is much less. On February 21 he reported that he was feeling fine and without any pain.

On March 25, I saw the patient after a month's rest and he was very much discouraged, as all his pain had returned. He was admitted to the hospital and I used the serum every day, beginning with 2 minims and increasing it rapidly until he was getting 1½ c.c. every day, with marked reactions. He remained in the hospital until May 8, when he went to his home in Summit, N. J.

The growth within the nose had all disappeared and the enlargements on either side of the neck were smaller than at any time before.

671 Broad Street.

Cerebro-spinal Fever and the Sphenoidal Sinus. D. EMBELLTON and E. A. PETERS, *Lancet*, May 22, 1915.

The authors show by their cases that empyema of the sphenoidal sinus has perhaps a causal relation to cerebro-spinal infection. Adults are less susceptible because of a diminished tendency to sphenoidal empyema. It may be advisable, in cases of cerebro-spinal fever, to open the sphenoidal sinus. The naso-pharynx, at any rate, should be treated by antiseptic measures. ED.

DR. EMIL MAYER'S RESIGNATION AS AMERICAN EDITOR OF THE CENTRALBLATT.*

40 East Forty-first Street,
New York, Aug. 5th, 1915.

To the Editor of the Laryngoscope:

Dear Sir:—The Editor and the Publisher of Semon's *Internationales Centralblatt für Laryngologie* have removed the name of Sir Felix Semon from the title page of their Journal, where it had been placed in honor at the time of his retirement from active practice six years ago, because, as a naturalized English citizen, he expressed his indignation at "Germany's barbarous warfare."

Since this action destroyed the Journal's claim to be international in character, and as a protest against the introduction of politics in a scientific Journal, as also in loyalty to one who has done so much for Laryngology, I promptly tendered my resignation as collaborator for America to that Journal, for silence on my part might be construed as an endorsement of their action.

As the matter is of interest to all American Laryngologists, may I ask you to publish this statment with the accompanying copy of my letter to the Editor and Publisher, which is fully explanatory, at an early date?

Yours very truly,
(Signed) EMIL MAYER.

40 East Forty-first Street, New York City.

Prof. Dr. G. Finder, Editor,
Mr. August Hirschwald, Publisher,
International Centralblatt für Laryngologie, Rhinologie,
Berlin, Germany.

Gentlemen:—In the June number of the *Centralblatt* I find the following:

"1. Declaration.

"In the *Times* of the twelfth ultimo there is an open letter of Sir Felix Semon, as follows:

To the Editor of the Times:

Sir: For many years I believed in the possibility of a better understanding between this country and Germany, and it was the most bitter disappointment to me when the great crash came last year. Even then I hoped that it would suffice for a naturalized British citizen of German

NOTE—Drs. McBride, Logan Turner, H. J. Davis and Watson Williams, of England, and Dr. E. Schmiegelow, of Copenhagen, have also resigned from the "Centralblatt" for the same reason as Dr. Emil Mayer.

extraction loyally to do his duty by his adopted country without making any public expression of his faith. The inhuman methods of German warfare, however, have often, and of late with ever increasing force, induced me to think that it would be right for a German by birth to publicly express his detestation of that policy. What has hitherto deterred me from doing so has been the fear that such a statement might be misconstrued as a desire to personally court favor. But now that Sir Arthur Pinero, in the letter published in the *Times* of to-day, has pointed out that an attitude of continued silence might be interpreted as "Sitting on the Gate," I beg to say that I emphatically abhor the barbarous methods, one and all, employed by Germany.

Yours obediently,
FELIX SEMON.

Rignalls, Great Missenden, May 11:

When Sir Felix Semon, surely misled by the lying reports in the press of the enemies of Germany, wrote this letter taking a public stand against the land of his birth, he must have known that this would create the deepest pain and bitterest disappointment to his German friends and colleagues. Wise and foreseeing as he is, he could not feel for an instant any doubt of the effect this would have on any further relations connecting him with the Old Fatherland.

He could not doubt that these consequences would affect his relations with this Centralblatt which he founded, edited for a quarter of a century, and brought to its fullest bloom, and which in memory thereof still bears his name. Although this journal is an international one, recording the scientific labors of our specialty in all lands, always keeping most carefully its international character, it nevertheless remains the fact that it appears in the German language and in the capital city of the German Empire.

Because of this fact the editor and publisher, proud to be Germans, consider it to be further impossible to retain at the head of this journal the name of a man who has in a public statement attacked their Fatherland and hence, to their great regret, still grateful for Semon's labors in this journal, are compelled to declare that the name of Semon in the title of the International Centralblatt will henceforth be omitted."

(Signed) GEORGE FINDER, Editor.
AUGUST HIRSCHWALD, Publisher.

This combined act of yours has affected me most seriously, and I trust that I may briefly recall to you my connection with the Centralblatt, which I feel gives me the right to express my opinion of your action.

It is just sixteen years ago this month that Sir Felix Semon appointed me as independent editor of the Centralblatt for America, in association with Professor Lefferts, with whom I worked in entire harmony for ten years, until upon Semon's withdrawal from all active work, Lefferts resigned, while I remained at Semon's urgent and earnest request as sole American editor.

During these ten years, there sprung up between Sir Felix Semon and myself the strongest bonds of friendship, and you are aware that it was at my instigation, and as a result of my labors that a beautiful silver box, a replica of a bound volume of the Centralblatt, was presented to him on behalf of the past and present collaborators on the occasion of his retirement from active work in 1909.

This box, made by Tiffany of New York, bore the words of Prof. A. Rosenberg, of Berlin, after the name of the donors: "In love and honor as a token of their recognition of the valuable services to laryngology and in grateful remembrance of the most friendly consideration shown to each one of them by Sir Felix Semon."

You are also aware that in this long series of sixteen years, I have subscribed for journals in order to make abstracts conveniently, that much of the material was typewritten for me, and that all these expenses, including the postage, was borne by me, and the only return I received was a copy of the *Centralblatt*, together with the knowledge that the work of my fellow-countrymen was fully represented in the World's Literature.

Since your editorship, I have been the sole representative of America, and you will agree that now, as before, America has led all countries in the yearly count of abstracts published. You know also that in the sixteen years of my work no complaint of unfairness has been registered against my work, either to you or to myself.

With this explanatory preamble, I feel that I have shown my loyalty to you and to the Centralblatt, and am thereby entitled to express myself regarding your action in removing the name of Semon from the title page of the journal.

I feel that the right was not yours to take this drastic action without conferring with those most deeply concerned, your co-editors, with whom you are in regular communication. I furthermore disapprove of what you have done and also protest most forcibly against the publication of your patriotic and political views in a purely scientific journal.

In your attempt to cast obloquy on the name of a man who stands easily the highest of all living laryngologists, a courteous gentleman and a faithful friend, you leave me no other course which I can follow in honor and self-respect than to tender my resignation as American collaborator to the International Centralblatt for Laryngologie, to take effect immediately and which I now formally do.

I shall at once notify the American publishers of books and journals, heretofore sent me for review, that I have resigned and am no longer entitled to receive them.

Regretting deeply that your action has forced me to take this summary method of severing our heretofore cordial relations, I am,

Yours very truly,

(Signed) EMIL MAYER.

Roentgenography of the Maxillary Antrum. N. S. FINZI and G. S. HETT, *Arch. Radiol. and Electrother,* V. 20, No. 2, July, 1915.

In the x-ray examination of the maxillary antrum the following points should be borne in mind: (a) prolonged screen examination may cause epilation; (b) a distance of twenty inches of the anticathode from the nearest point on the scalp is best; (c) the anterior view is most important and the oblique view is also of importance because it shows the associated teeth; (d) when the air in the antrum is replaced by liquid or solid matter the antrum appears darker. Marked opacity means thickening of the bony wall of the antrum. Diagnosis should not be based on x-ray examination alone, but the symptoms and physical signs as evidenced by anterior and posterior rhinoscopy, and transillumination should be taken into consideration. ED.

EDITORIAL DEPARTMENT

THE DEAF

Their Education—Improvement of Conditions—Responsibilities and Participation of the Profession.

JOHN DUTTON WRIGHT, M. A.
DIRECTOR OF THE WRIGHT ORAL SCHOOL FOR THE DEAF
NEW YORK CITY

The aim of this department of THE LARYNGOSCOPE will be to bring to the notice of its readers from month to month, facts that may be helpful to physician and patient in dealing with the life-problems involved in deafness. Suggestions from readers will be gladly received and all questions answered to the best of our ability.

Hard of Hearing Classes in London.

In every great city there can be found a certain number of children who are sufficiently deaf to be unable fully to benefit by the educational facilities offered in the elementary schools, but whose hearing is not impaired to an extent which would justify their inclusion in a school for the deaf. In classification, these children come, roughly speaking, midway between the slightly deaf, who can be educated in the front desks of hearing classes, and the very deaf, who require the special education of the deaf schools. As a useful general title, I prefer to speak of them as "hard-of-hearing" children.

Once I had begun medical work in the schools for the deaf under the London County Council, it did not take me long to realize that this class of children was neglected educationally, and that one of the most crying needs for reform lay in this direction. At that time they either dragged out a useless and colorless existence in the back row of a large hearing class, were put down as inattentive and left to themselves or wrongly punished, or they received—a few of them—education in a special school, either for the deaf or for the mentally defective.

*Extracts from an article entitled, "Hard-of-hearing Classes in London," Dr. Macleod Yearsley, Volta Review, February, 1915. It would be an excellent thing if classes similar to those established by Dr. Yearsley could be opened in all American cities.

The children fit for a hard-of-hearing class are not to be found among congenitally partially deaf cases nor from among those semi-deaf who have acquired the defect from such causes as meningitis, mumps, or injuries affecting the internal ear; this is obvious. Such cases have not usually sufficient hearing for any form of teaching but that provided in the deaf centers. It is essentially the middle-ear cases which are suited to hard-of-hearing classes, in whom deafness is due to suppuration or catarrh, especially those in whom it has been induced by adenoids. A few may show a limited amount of secondary involvement of the internal ear, but such condition is not common amongst those suitable for classification as hard-of-hearing. The children with middle-ear deafness are distinctly unfit for a deaf school and the necessary association there with deaf-mutes, so-called; whilst, at the same time, they are unable to profit by ordinary hearing-school methods. An analysis of the first 17 children dealt with gave the causation of the deafness thus:

1.	Middle-ear catarrh	5
2.	Middle-ear suppuration	9
3.	Middle-ear suppuration on one side—catarrh on the other	3
		17

The primary cause in 12 cases was adenoids, or 75.8 per cent., a high percentage; but, when one takes into consideration the enormous potency of these growths for causing ear disease, not higher than is to be expected. Taking the five catarrhal cases, four were undoubtedly due to adenoids and one was doubtfully so. Of the nine suppurative, six were undoubtedly of adenoid origin; of the remaining three, one was due to scarlet fever; the other two gave no history. Three cases showed a combination of the two conditions, suppurative and catarrhal; on two of these the right and in one the left ear showed suppuration. The radical mastoid operation had been performed in three cases, in one of them on both sides.

The question of the hearing of these children was a very interesting one. In an experimental class of this kind it was a little difficult at first to fix the amount of hearing which should qualify for admission. Two of the cases who, at the initial examination at the head office, showed a hearing acuity, one of six inches for the voice and one for the raised voice only, were found subsequently to hear 48 inches and 120 inches in the one and 8 and 14 inches in the other. These children were transferred to the front desks of an elementary school and did well there. A third, who appeared to hear the raised voice 24 inches, it was found necessary to transfer to a school for the deaf.

I have found that several factors have to be taken into consideration in estimating accurately the fitness of a given case for the various forms of deaf education, such as shyness, individual variations in mentality, and the listlessness engendered by a sojourn in a large hearing class where the inability to hear has resulted in what may be termed chronic inattention. Deducting the three cases just mentioned and taking the amount of hearing in the remaining 14, the average hearing distance was about 16.3 inches in the right and 14.5 inches in the left ear, or for both ears 15.4 inches. In dealing with such small numbers, however, this would be a very fallacious figure upon which to base any conclusions. Subsequent investigations have shown me that it is of little or no use to form any empirical estimate of the amount of hearing which should qualify for a hard-of-hearing class. The amount of hearing which decides the question of whether a given child is to be clasified as fit for (1) hearing class, (2) hearing class in front desk, (3) hard-of-hearing class, or (4) deaf school, can only be arrived at after prolonged experience and experiment. Careful examination by a skilled otologist is needed in every case, and the otologist has need to be one of experience in handling deaf children.

Probably, given normal mentality, a comparatively small amount of hearing is sufficient to enable a child with acquired deafness to be instructed in a hard-of-hearing class, whereas in dull or very backward children one is justified in advising such a class when the amount of hearing is comparatively great. In saying this, I am giving the opinion formed by some four years of close observation of hard-of-hearing classes and their results: thus I have found a bright, quick child, with only six inches of hearing for the ordinary voice, doing as well as, or even better than, a dull child, who could hear the same test at 16 feet.

Another important factor is the daily variation of the hearing of many of these cases. Whilst the hearing in some of the children remains to all intents and purposes stationary, that of others (especially in catarrhal cases) varies, within considerable limits, with the state of the weather and the health of the child.

I am inclined to think that the amount of hearing required to enable a child to respond well to education in the front desks of a hearing school is much greater than at first sight appears. It is characteristic of middle-ear deafness that the power of accommodating the ears to particular sounds is impaired, and that, in consequence, extraneous noises confuse the slightly deaf and hard-of-hearing scholar much more than the hearing child. In every class,

especially in large ones, there is a more or less continuous environment of outside sounds—shuffling, coughing, dropping of books, etc.—as well as the more distant hum of life outside the school, accentuated sometimes by open windows. If any hard and fast rule is to be made, the best plan probably would be to educate all those who cannot hear whispered speech below 6 feet (save, of course, the very deaf), partly in the front row of a hearing class, partly in a hard-of-hearing class. Lesser defects of hearing than the 6-foot whisper would do well in the front desks of a hearing class. The matter, however, requires further working out.

I would like to point out here that the whisper used in testing is made by emptying the chest of air and whispering with the last breath. Some persons appear to consider that a hoarse sound suggestive of the death-rattle of an elephant is what is meant by the "forced whisper." Fourteen cases had natural speech, but in almost every instance, unless educational measures had been taken to prevent it, it would have tended to become defective.

Before the class had been long in existence the increased industry and happiness of these children, the difference in their hearing, and the new confidence due to their finding a means of following the meaning of their teacher spoke volumes for its success. The class provided a method of education which enabled the hard-of-hearing children to lose their former apathy and listlessness, born of compulsory inattention from inability to follow their teachers in the hearing school. It enabled a number of them to return to a hearing class and keep up with their more fortunate classmates. It enabled those who had passed the school age to go out into the world with a ready means of communication, which was of enormous assistance to them in making a living.

In studying the results it was noted that, after deducting 4 children who had completed their legal period of education, 1 who died, 3 who left the neighborhood, and 71 still in the centers, 13 out of 27, or 48.1 per cent. were transferred to schools for the hearing, where they did well. Nine were, by reason either of the amount of their defect of hearing or speech, or because they were so backward as to require further special education, transferred to a center for deaf children.

SOCIETY PROCEEDINGS.

ABSTRACT OF THE REPORT OF THE SCIENTIFIC PROCEEDINGS OF THE THIRTY-SEVENTH ANNUAL CONGRESS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

HELD IN NIAGARA FALLS, CANADA, JUNE 1, 2, 3, 1915.

DR. EMIL MAYER, ABSTRACT EDITOR, NEW YORK.

The president, Dr. Alexander W. MacCoy, of Philadelphia, in a felicitous address of historic interest, welcomed the members to the thirty-seventh Congress.

Papilloma of the Larnyx. DR. THOMAS HUBBARD, TOLEDO.

(Published in full in the September, 1915, issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. I. PAYSON CLARK, Boston: I wish to take exception to Dr. Hubbard's view with reference to tracheotomy in children. I cannot agree that leaving the tube in place for a long period hinders the restoration of function of the larynx. I have had patients who have worn the tube for a number of months, and after its removal there was no difficulty in the re-establishment of laryngeal function. It seems to me to be dangerous to remove the tube in children as long as there is any of the growth in the larynx, because there is apt to be an increase of this, and one may face the problem of doing another tracheotomy, which, as is well known, is more difficult than the primary tracheotomy.

I would also like to register a plea for the indirect method of laryngoscopic examination. With the invention of all the instruments for the direct view of the larynx there is great danger of neglect of the indirect method, which seems to me to be much better for adults.

DR. E. FLETCHER INGALLS, Chicago: I would like to ask the reader of the paper about his results with trichloracetic acid. I cannot understand how it can be used in strong solution. Neither do I understand whether the tube, through which he did the cauterization, was removed immediately after the operation or later. If it was removed at once, was there no swelling or trouble in restoration of function afterward?

Dr. Clark says the second tracheotomy is more difficult than the first. I have not had much experience in this regard, but my recollection is that the second was the easier. I do not see why this should not be the case.

In curetting the growth from below, was it done on sight—could Dr. Hubbard see what he was doing? I would also like to know whether he used an interrupted stitch in suturing.

DR. ALLEN B. THRASHER, Cincinnati: I have not seen cases of papilloma of the larynx very often in adults, because these intralaryngeal growths assume a different character; in children, however, they are very frequently encountered. In these cases one should never operate without

telling the patient that the operation probably will have to be repeated. The larynx must be kept clear until the child is fifteen or sixteen years of age. There is always danger of recurrence while the larynx is small. I have kept a tracheotomy tube in for four years without any trouble. It was removed in the meantime, of course, but not left out entirely. In this case I could not see the patient regularly, as he lived one hundred and fifty miles up in the country, and was unable to make frequent visits to Cincinnati. This patient is now perfectly well, and has had no trouble since he was sixteen years old. He wore the tube constantly from his twelfth to his sixteenth year.

I have found tracheotomy more easily performed the second time than the first.

I am doubtful about the advisability of massage. It seems to me that it would increase the blood flow to the larynx, and this increased blood supply would be apt to stimulate growth. I have had no experience in this regard, but it does not appeal to me as being a scientific procedure. I believe the fact that Dr. Hubbard has not had trouble with his cases is due to accident. I would be afraid to try it in cases of papilloma. In other cases it may facilitate the return of the voice.

In cases of papilloma of the larynx, as in cases of warts elsewhere, I have used nitrate of silver. The mucous membrane of the larynx is much more easily destroyed than that of other parts, but nitrate of silver will not destroy it.

Dr. John F. Barnhill, Indianapolis: It has seemed to me, judging from my own experience, to be impossible, under certain circumstances, to get all the growth out, including the base of the mucous membrane. Dr. Lynch's method is largely in the open, and that is why it will prove successful. In all cases in which I have absolutely cured this class of disease, I have opened the larynx thoroughly and have seen that I actually removed all of the growth. Laryngofissure is not satisfactory in all cases. To open the larynx, to see what is there, and to thoroughly remove it under antiseptic precautions, is a plain surgical procedure, and, with proper closure of the wound, is, it seems to me, the best method.

Dr. Harmon Smith, New York City: A few days ago I had the opportunity of seeing Dr. Lynch operate on a papilloma of the larynx in a boy fifteen years of age. The larynx had been thoroughly cleared out by another laryngologist. The growth recurred. For a number of years the patient wore a tracheotomy tube, with no particular effect on the growth. He finally fell into my hands, and I used fulguration. Then another used radium. The growth would disappear partially and then recur. There had remained a fibropapillomatous mass in the anterior commissure, in the subglottic space. Dr. Lynch operated, curetting out this fibropapillomatous mass thoroughly. He could hold the cords aside and look underneath. I think Dr. Lynch has devised a surgical procedure for these cases.

Dr. Yankauer has invented a method by which fulguration may be used and oxygen sent in in a current: but there is not the deep burning that is necessary for the removal of these deep growths. Fulguration will certainly take off the skin, but that is not sufficient.

There is a difference in the infectivity of these laryngeal warts. In studying a series of cases of warts in children I myself got warts on my hand. There is a great difference between the multiple laryngeal warts in children and those in adults. In adults it is much easier to get rid of them. Radium, in two or three applications, will remove them in adults, but not in children. We do not know the true pathology of these papillomata. If we destroy the mucous membrane at the base and remove the blood, we may be reasonably sure that the growth will not recur.

DR. LEWIS A. COFFIN, New York City: In the clinic I feel hopeless when I see a lot of children with papilloma of the larynx. We have records, however, of cases in children of removal by radium with no recurrence. A case was successfully treated by Dr. Abbe. Another case was that of a woman, forty-three to forty-five years of age, a singer, who was treated by two applications of radium, lasting from one-half to three-quarters of an hour, with the disappearance of every vestige of the growth. There has been no recurrence for more than three years. I have now under my care a man from whose larynx I removed growths by the direct method. I treated him with applications of monochloracetic acid, but the larynx filled up completely. One year ago, when he phonated, the larynx was entirely filled with the growths on the arytenoids and in the anterior commissure. Dr. Abbe sent me one hundred milligrams of radium in a tube; this was applied to the growths, and in forty-eight hours they were entirely gone. After the removal of the growth on the epiglottis and the one on the arytenoid had grown smaller, I could see the large growth on the anterior commissure. Another application of radium was made to this for an hour. Five days ago, when I saw the man, I found the growths had simply withered up. There is still a small growth on the arytenoid and a ridge on the epiglottis.

DR. EMIL MAYER, New York City: I would like to hear the views of the members regarding the etiologic factors concerned in these growths. I have had two cases in adults working in tunnels and breathing compressed air. It seems rather rational that such a thing might occur. Removal by the indirect method has also resulted in the complete disappearance of the growths. If tracheotomy is employed, the tube must be carried for quite a number of years. I have had a case which is illuminating in this connection, and which shows that there is danger after tracheotomy. A little child had so large a papilloma in the larynx that tracheotomy was necessary. While I was cleaning the tube and putting it back again the child nearly passed away. After that I had two tubes, and as soon as one was out the other was put in, and in that way managed very well. The child lived quite a distance from me. One day while at play the child grasped the tape attached to the tracheotomy tube and pulled it out, gave one cough, and, before help could come, died.

DR. D. CROSBY GREENE, JR., Boston: Recurrence followed in a case in which I operated, and the patient went to another laryngologist, who removed the growth by thorough thyrotomy under direct vision. Six months later I saw the patient again, and the larynx was entirely filled with papillomatous tissue. Dr. Lynch's method will not be sufficient unless the immunity of the patient has been established. Within the past

six months I have seen a case in which the patient presented warts on the skin simultaneously with papillomata of the larynx. Removal of the papillomata in the larynx was followed within a short time by disappearance of the warts on the skin.

DR. HENRY L. SWAIN, New Haven: Many years ago I had under my care two cases of papilloma of the larynx, one in a boy, the other in a woman thirty or more years of age. The boy was intractable and passed out of my hands. Nine years afterward he coughed up the remains of his papilloma. I have seen him within the last two years, and he has no growth at all. If he had stayed with me his single papilloma would probably have become multiple. The woman was treated in various ways. I cauterized with pure nitrate of silver and with electricity; I curetted, and rubbed in lactic acid, and despite all this the papilloma returned. Some time ago Dr. Sperry called me in to see a patient, thinking laryngotomy was necessary. I found my old patient, the woman, with several papillomata. She had coughed off one growth, but the others had remained the same for some years. There was never any obstruction in her case. Whether they will become malignant, of course, I do not know. In another case I have used alcohol sprayed on the surface of the papilloma, and have certainly prevented the necessity of instrumentation. I have done nothing else in this case, and the larynx is now entirely free. The growths have reappeared four different times, but for ten years I have done nothing but spray the surface with alcohol. This case is subject to the criticism that the growths might have disappeared if left alone, but I hardly think that true, as they disappeared so quickly under the treatment. At one time there were five distinct papillomata in this case.

DR. WILLIAM E. CASSELBERRY, Chicago: In the glamour of the new we are apt to forget the merits of the old. No one has mentioned the old galvanocautery. At the last congress in Washington I presented a cautery which I devised, and which I have been using ever since. I cannot understand why fulguration possesses any advantage over galvanocautery. After removal of the growth with the forceps, by either the direct or the indirect method—and I have sometimes used both in the same patient—and after curetting (and I have never been able to curette satisfactorily in my own mind, always feeling that I have left shreds), the cauterization of the base with the galvanocautery is desirable. It is the easiest and most convenient method.

DR. HARRIS P. MOSHER, Boston: Did I understand Dr. Hubbard to say that the tracheotomy tube worn for any length of time interferes with the return of the voice? I have not found that to be the case. This particular part of his theory, while very pretty, is not borne out by the facts.

DR. JAMES E. LOGAN, Kansas City: I have had the very best results after curettement. Within the past two years I have had two cases of special interest. In one case there was a suspicion of carcinoma. I removed the growth a number of times, large pieces of what appeared to be fibrous tissue being taken out, and followed this with curettement. There has been no return. Another case was that of a woman, sixty years of age, the mother of nine children. A few years ago she had every evidence of carcinoma. After removing as much as I could of the growth, I

used the galvanocautery to remove the rest. To-day she has as good voice as ever. In another patient, forty years of age, I have prevented recurrence for seven years by the use of the galvanocautery. Fulguration cannot be localized as can cauterization with the electrodes, suggested by Dr. Casselberry.

DR. ROBERT CLYDE LYNCH, New Orleans: My experience with papilloma of the larynx covers sixteen cases. I will give briefly the histories of two or three, which will illustrate the results obtained with the method which I have devised.

The first case was referred to me by Dr. Jackson, by whom the patient, a woman, had been treated for two years. He had reoperated every month or six weeks for recurrence of papilloma of the larynx. The patient then removed to my neighborhood. I attempted to operate, as Dr. Jackson had done, with his forceps and other instruments. The method in my hands was entirely unsuccessful. At that time I began to use the suspension apparatus. The patient was anesthetized, and I carefully dissected out every portion of the growth which could be seen, both above and below the vocal cords and around the epiglottis. I cleared the area entirely. I suspected that I would have a good deal of postoperative edema, and kept the patient in the hospital for several weeks. Healing was perfect. That was a little more than two years ago, and there has been absolutely no recurrence since that operation.

The second case was that of a little boy, reported last year. The patient came into the hospital very much cyanosed, and the fright of coming into the clinic practically stopped his respiration. Tracheotomy was performed and the tube left in place. I thought that would be sufficient to clear up the papilloma, but it had no effect. I operated nine times by the direct method, clearing out each time as much of the growth as I could see. Each time the papilloma recurred. Then I attempted thyrotomy. With the tube in place I opened the thyroid. The child was two years old, and this was very difficult. I was not successful in cleaning out the larynx entirely, and in the course of three weeks it was again filled with papilloma. I left the child alone for six months, with the tracheotomy tube in place. In the meantime I was trying to learn some new method for dealing with such cases. Finally I suspended him, and dissected out the growths as far down as the end of the tracheotomy tube. That was two years ago, and I saw the patient just before I left home. There was no recurrence. I took out the tube twenty-four hours after doing this dissection. It was the first time in two years that the child had been without it. He had some voice at the end of twenty-four hours, and in two weeks his voice was as good as ever.

The third case was that of a negro woman. I dissected out the papilloma in the same way, and she returned home. She was very religious, had attacks of "hysteria," when she "shouted" and sang, as the negroes do in their meetings, and at the end of six months she came back with papilloma of the larynx. All my operative work in this case had been devoted to the region above the vocal cords. I thought this the first case in which I would have to report recurrence after operating with suspension. In looking over my records, however, I found that our previous efforts had been confined to the region above the cords, whereas the pres-

ent papilloma was below the cords. This was dissected out, and there has been no recurrence.

It is impossible to remove papillomata completely by any method of punching or pinching or biting, using the forceps in one hand and some other instrument in the other. It is for this reason, I think, that we have so much recurrence. In the sixteen cases in which I have operated by dissection with suspension there has been no recurrence up to the present time.

DR. HUBBARD, closing the discussion: I think Dr. Lynch has devised the most surgical and precise method of dealing with these growths. All, however, have not the apparatus for this particular work, and so there is a field for the older procedures. I have found it a very useful procedure to put interrupted stitches in the tracheal ring. One must have a free field, snipping off, if necessary, all the isthmus which obscures the view. I usually take up the trachea and put in silkworm gut, about one-third back, through the ring in a child. In other words, I want it as firm as possible. The suture is placed between the cellular tissue and the tracheal ring, one stitch on either side, drawn together, and the ends left long. The ends are brought out on the neck and fixed with adhesive plaster. One can then pull on these and draw the trachea and the larynx forward, getting a glimpse of the lower end of the larynx. Otherwise the curetting is done blindly. Thorough curettage of the larynx can be accomplished by this method with curettes of various sizes and angles. If the papillomata are "ripe" they can be gotten out at the base; those that are in a state of active growth cannot be entirely removed. I always inspect the growth from above prior to curettement.

In using the trichloracetic acid I simply moisten a small swab, smear with the crystals, and go over the surface with this. The tube is fenestrated, it is inserted in the larynx, and is left there.

I want to call attention again to massage as a factor in producing the condition which brings about the restoration of the normal processes of the larynx. Any simple method like massage is superior to the absolute rest of the larynx induced by the prolonged wearing of the tracheotomy tube.

Some Statistic Observations on Oto-Laryngologic Diseases Among Negroes, Based on Fifteen Hundred Cases. DR. DUNBAR ROY, ATLANTA.

It is surprising how few negroes present themselves for nasal diseases. Out of the total of fifteen hundred, only three hundred and forty-one came for nasal complaints. Spurs and deviations are very rare. The writer has never seen a deviated septum in a full-blooded negro. In the writer's opinion, this is due to two causes. In the development of the maxillary bones you never see a contracted and high arched palate among negroes. This tends to substantiate Mosher's argument as to the importance of the premaxillary ridge in the causation of septum deviations.

Traumatism as a causal factor is rare, because of the protruding brow and soft resilient cartilages externally. Acute inflammation of the accessory sinuses was exceedingly rare, due, in the writer's opinion, to the free ventilation in the nasal cavities. Only chronic necrosing ethmoiditis with polypi occurred more frequently than other chronic sinus diseases. Hay fever occurred in only two cases, and did not differ in

symptoms from that seen in the white race. Atrophic rhinitis was seen in one case only, which would seem to disprove that theory making large nasal passages a predisposing cause for this condition. No case of chronic maxillary abscess was seen. It is a well-known fact that few negroes have bad teeth. Syphilitic lesions were frequent, as also purulent rhinitis in the young, which readily yielded to antisyphilitic treatment of the old regime—i. e., mercury and iodid of potassium.

Pharynx, epipharynx and larynx. There were one hundred and six cases involving these parts, by far the largest percentage. Diphtheria is exceedingly rare in spite of the poor hygienic surroundings of many of these people. Laryngeal tuberculosis occurred only twenty-three times. Laryngeal and pharyngeal syphilis, two hundred and seventy. Adenoids and enlarged faucial tonsils occurred two hundred and ninety-six times, which refutes the statement made several years ago that adenoids are very infrequent among the negroes.

DISCUSSION.

DR. CHARLES W. RICHARDSON, Washington: In the main my observation is in accord with Dr. Roy's, but this is not the case with regard to the apparent immunity of the negro to diphtheria. For a number of years I had charge of the diphtheria ward in the Government Hospital in Washington, which was, in fact, the municipal diphtheria ward. There were practically no negroes in it. I do not remember a case of laryngeal diphtheria in any of the wards. I never intubated a negro child in my whole experience.

My experience is not in accord with Dr. Roy's with regard to the presence of adenoids and enlarged faucial tonsils in negro children. I think some of the worst cases of adenoids I have ever seen and operated on have been in negro children. Some years ago I was inclined to believe that negroes do not have this condition, but latterly, probably in consequence of school inspection, they come into the clinics in great numbers.

Syphilis among negroes is quite general in Washington as well as in Atlanta.

True Myxoma of the Rhinopharynx—Report of Two Cases. DR. VIRGINIUS DABNEY, WASHINGTON.

Extreme rarity of true myxoma anywhere in the body, but especially in the rhinopharynx, leads to report of two cases. Some pathologists reject entirely the term, believing no such pure tumor exists. However, sections show absolute absence of any fibrous elements.

Case 1.—Tumor seen on drawing forward soft palate. Under ether, large adenoid curette fitted over growth which was removed from attachment to the basilar process. No recurrence after ten months.

Case 2.—Two growths found at operation. Only one could be seen at examination; smaller attached to basilar process, larger to posterior ethmoid. Both were divulsed with large adenoid forceps. Patient had had similar growth removed eleven years before. Photographs of growths and of microscopic sections were given.

DISCUSSION.

DR. HARMON SMITH, New York City: This must be the exception which proves the rule. It has been definitely stated by many histologists and

pathologists that true myxomata do not occur in this region. In the majority of instances myxoma has sprung from the ethmoid or somewhere else; mixed fibroma and myxoma, on the other hand, arise in the nasopharynx. So far as I know, there has been no other case reported of true myxoma springing from this region.

DR. JAMES E. LOGAN, Kansas City: I would like to ask the nationality of these patients, especially the one with the very large growth. It often happens that these growths appear in individuals of certain nationalities. Those of Scandinavian birth are more apt to have them than any other class of patients. I have had two pathologists at variance on two cases, one operated by myself and the other by Dr. Fenger. One pathologist said there was every evidence of myxoma, the other, that it was fibroid or myxofibroma. The tumor in one case, a boy of Swedish nationality, was attached to the basilar process.

DR. DABNEY, closing the discussion: One patient was German, the other American. What Dr. Smith says about the origin of these growths is the excuse for this report. They are supposed never to occur. I had the specimens examined by very skilled pathologists in Washington, at Howard University—a school for colored students, having very excellent pathologists—and also at the government school. They are true myxoma. I have looked up the literature, and there are no other cases reported of true myxoma of the rhinopharynx.

The Surgical Anatomy of the So-Called Capsule of the Faucial Tonsil.
DR. G. HUDSON MAKUEN, PHILADELPHIA.

(Published in full in the present issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. WILLIAM E. CASSELBERRY, Chicago: I am very glad to have heard this definition of terms. I have been doing the same operation that Dr. Makuen has been doing, but whereas he called it the intracapsular method, I have been calling it the extracapsular method. I still object to his term intracapsular for either his way or mine. Intercapsular would be a better term than intracapsular, it seems to me. Whether the capsule developes from the aponeurosis or from the tonsil itself matters not. I would not, in either event, forget the word capsule, for surely, as we see it, it is a capsule of the tonsil. The tonsil is enveloped in a smooth membrane which can be separated from the major portion of the aponeurosis. The smooth dissection of the capsule from the major portion of the aponeurosis is, I believe, the best operation. It results in no distortion of the pharynx. In the majority of instances it is unnecessary to cut much of the plica or mucous covering of the pillar itself. Cutting the covering of the pillar is one of the things which results in infection and distortion. I, too, have been struck by the difference in the thickness of the capsule. Sometimes, when I have exposed a piece of muscle, I have thought I have gone too far, and when I have tried to get only a thin portion, I have gotten a thicker portion.

DR. J. GORDON WILSON, Chicago: If the surgical anatomy of the tonsil is different from the anatomy, I miss Dr. Makuen's point. I cannot understand how he can call the part of the covering of the tonsil which comes from the aponeurosis of the muscle a part of the capsule of the

tonsil. Poire illustrated that in his text-book. That part is not capsule of the tonsil. The capsule of the tonsil normally is very thin, as may be seen when it is sectioned. It is separated from the other tonsillar tissue by a thin layer of areolar tissue. Toldt's anatomy gives the best description of this. The crypts go right down to this connective tissue sheath. As age increases this sheath thickens; it is also thickened by inflammation.

Dr. George E. Shambaugh, Chicago: I cannot follow Dr. Makuen in tracing the thickness of the capsule of the tonsil. As I understand it, this thickness increases with age, and the tonsil becomes more and more adherent with age, according to Dr. Makuen's idea. In my experience, this is not the case. I have taken out the tonsil in people of seventy, in whom it is as loosely adherent as in infancy. If there is adherency, it is because there has been a great deal of inflammation, and not because of the physiologic character of the tissue.

Dr. Henry L. Swain, New Haven: I have obtained a good deal better idea of what the capsule really means by studying the lingual tonsil than by studying the capsule of the faucial tonsil, especially by studying the follicles, which heap themselves up around the tonsil. The follicles, accumulating around the tonsil, make a complete limiting membrane. If this is taken out it forms an impression or mould in which the tonsil lies. The larger the tonsil the thinner the capsule, and the smaller the tonsil the thicker the capsule. If the tonsil is dissected out in the cadaver, it is found that there is, in a child, a very slight line of demarcation where the covering membrane of the tonsil ends and the posterior pharyngeal wall membrane begins. Young children have very little line of demarcation between the connective tissue on which the tonsil rests and the posterior layer of aponeurosis.

Dr. John F. Barnhill, Indianapolis: Dr. Makuen spoke of splitting the capsule. I could not understand that at the time, but having studied the tonsils, which I saved, I can now see how one might speak of splitting the capsule, or, rather, the tissues around it which are removed with the tonsil. I have brought along a large number of these tonsils, which demonstrate, I think, that there is an external capsule which is connected with the deep tissues of the neck, and another which has nothing at all to do with this.

One of the tonsils in this collection, by the way, shows a portion of the styloid process.

Dr. Lewis A. Coffin, New York City: My conception of the tonsil with its capsule is about that of a tangerine with its peel. The outside skin of the tangerine can be easily removed, without the fibrous covering just over the pulpy part of the tangerine, which is connected with the interfibrillar tissue of the fruit. This fibrous covering, to my mind, is the capsule of the fruit, and not the outside rind. So it is with the tonsil. If there is repeated inflammation, there will be thickening of the outer capsule.

Dr. Greenfield Sluder, St. Louis: I have listened especially for one point which has not been cleared up in the discussion. I have been very much interested in this subject for three or four years, and feel very much gratified that Dr. Makuen should have used the principle of picking

up the tonsil, to which I called attention before the laryngological section of the American Medical Association in 1910. The technic was not original with me; it is the technic of Physick, published in 1827. It has been strengthened, but not changed. The point to which I referred, which has not been made clear, is the capsule splitting process. Is there a delimiting membrane which bears the crypts at one end? Is there a fibrous delimiting membrane which covers the posterior constrictor and pillars, or is the crypt open on its lateral aspect, or is it closed by the envelope? (Dr. Makuen answered that it is closed by a very thin membrane.) If that were uniformly the case, this technic would be the ideal method of tonsillectomy, if it be not the case, the turning of the blade across does not remove the last cell of lymphoid tissue. If it does not remove the last cell of lymphoid tissue, it is not a success, because the activity of this lymphoid tissue will bring about a recurrence of the condition for which the operation was performed. Lymphoid tissue will grow up into the wound from the lingual tonsil, developing all the clinical symptoms which the case presented originally. I have seen that happen.

DR. MAKUEN, closing the discussion: Dr. Casselberry has referred to terms and definitions of terms. I used the term intracapsular tonsillectomy chiefly because no distinction has been made between what Dr. Wilson has called the true capsule—and which we all recognize as the true capsule—namely, the thin membrane, and the posterior aponeurosis to which the tonsil becomes so closely attached. The English and French schools of anatomists did not distinguish between these two structures. I use the term intracapsular tonsillectomy because no distinction has been made between the true capsule and this membrane to which it is so closely attached at times that it seems to be a part of the capsule itself. I have found that after mutilation of the tonsils this section of intrapharyngeal aponeurosis is taken out with the tonsil, and it has been called extracapsular tonsillectomy, where all the capsule has been removed. I object to a sharp instrument because it is so easy to go through this membrane. When you cut through this intrapharyngeal aponeurosis and get the finger down into the loose tissue between that and the muscle, you simply have to tear things out. That is why the finger dissection so rapidly went into disrepute. The finger nail made tears in the muscle which caused great contraction. We all do the same operation and try to get the same results, but the fact remains that we do get deformities in many instances. Someone in New York reported one hundred dissections with eighty per cent of deformities of the palate. We do not all do the beautiful operations which some do, and unless we are very careful, we will get these unfortunate results. That is why I have suggested the technic detailed in this paper.

Leucoplakia Buccalis and Lingualis. DR. ROBERT LEVY, DENVER.

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DISCUSSION.

DR. JOHN F. BARNHILL, Indianapolis: During the past year I have had one case of this nature. The patient, a woman thirty-two years of age, had formerly lived in Indiana, but because of tuberculosis had moved to Florida, where she had been living for four or five years. When she came

to consult me she had this condition, as diagnosed by a number of physicians, pathologists, bacteriologists, general practitioners and laryngologists. She also had tonsillitis. She would not allow operation because of the tuberculosis. She had been treated by means of X-rays, washes, etc. The mouth got absolutely well, and the patient is much better generally.

DR. THOMAS HUBBARD, Toledo: I have had three cases of this kind. I had a good deal of difficulty in establishing the diagnosis between this and pemphigus. In one case the patient had pemphigus, but the lesions in the throat were not typical pemphigus lesions, and had the case not gone on to typical pemphigus of the skin, the diagnosis would not have been cleared up. In another case this condition occurred in a man who had syphilis. He was a heavy smoker. The third patient was also a heavy smoker. He smoked from twenty to thirty cigars a day. After one week's cessation of smoking there was a complete disappearance of the lesion. These were typical leucoplakia lesions.

DR. E. FLETCHER INGALS, Chicago: About thirty years ago I reported a case of leucoplakia treated with the cautery, with cure. The lesion was not more than a centimeter in diameter.

DR. EMIL MAYER, New York City: I think leucoplakia is practically always the forerunner of malignant disease. I have under my observation at the present time a patient who, fifteen years ago, showed the first signs of leucoplakia. Within the year he has developed epithelioma. I have seen a number of such cases.

DR. CHARLES W. RICHARDSON, Washington: The cases which I have seen have usually been so extensive that any of the operative measures suggested here or elsewhere would be entirely out of place. In the last case which I had, not only the whole dorsal surface of the tongue, but the buccal cavity as well, was involved. The man had the most intense pain. He has since died. In all probability it would have developed into malignant disease. In some of the cases the dorsum of the tongue, the surface of the hard palate, the under surface of the tongue, and the buccal walls were involved.

DR. D. BRYSON DELAVAN, New York City: Most of the cases which I have seen have become malignant. Any irritative course of treatment is particularly contraindicated. Elimination of the source of irritation, as in tobacco smoking, will result in improvement. In view of the malignant tendency of this condition, it would seem that radium would offer advantages not likely to be realized by the older forms of treatment. Some cases have been subjected to this treatment and have improved under it. I do not know of a case, however—the matter being a recent one—in which a cure is said to have been effected.

DR. LEVY, closing the discussion: The case cited by Dr. Barnhill, of tuberculosis, might have been a case of leucoplakia suffering with tuberculosis. I have never seen a case of leucoplakia caused by tuberculosis, nor do I see how this could be determined. If it were due to tuberculosis, it was certainly remarkable. The fact that it got well is evidence that it was not leucoplakia. Various other skin diseases have been mentioned in this connection. Dr. Ingals went over the subject very thoroughly in his paper, which was one of the most satisfactory papers ever written concerning this condition.

The question of leucoplakia always terminating in cancer is, of course, an important one. In the full text of the paper will be found many views pro and con.

The case I reported is an unusual one, in view of the extent of the lesion. Other cases quite as extensive have not developed malignancy. It is not necessary for the case to terminate in cancer. The lower jaw, the parotid gland, and the surrounding structures were all removed, yet it was not cancer, as proved by the subsequent history of the case. If we wait long enough we may find cancer developing in the patient who had leucoplakia. Given a case of leucoplakia, however, it is not necessary that it will terminate in cancer. In cancer cases, undoubtedly, it is often possible, by going back far enough, sometimes as far as forty years, to find that the patient had leucoplakia. While cancer may be antedated by leucoplakia in many instances, it is not proved that all cases of leucoplakia will terminate in cancer. Leucoplakia of the tongue is reported by some writers as being more likely than that of other localities to terminate in cancer.

Hyperplastic Sphenoiditis and Its Clinical Relations to the Second, Third, Fourth, Fifth, Sixth and Vidian Nerves and Nasal Ganglion. DR. GREENFIELD SLUDER, ST. LOUIS.

The writer spoke of the body of the sphenoid independent of what cell occupied it, and mentioned the close relations of the above enumerated nerve trunks to its bony wall, and that the size of the cavernous sinus rather than that of the sphenoid cell was what determined some of those relationships. He spoke of the striking difference, clinically, between the nerves in the canals—maxillary and mandibular branches of the fifth and Vidian compared to the third, fourth and sixth, which run through the wide gap of the sphenoidal fissure, the former being a clinical question infinitely more often than the latter. The diagnosis was made from bone removed from the anterior part of the sphenoid sinus of one hundred and fifty-six cases by Dr. Jonathan Wright, whose microscopic findings corresponded almost uniformly with cases clinically. The slow growing bone increase had for its clinical history long-standing pain and often very slow progressive loss of vision, sometimes only a segment of the optic nerve being involved, the cases of violent headache and rapid loss of vision showing acute ostitis engrafted on the chronic process. The bone sometimes showed periostitis, and sometimes the mucous membrane was normal. The argument was that the clinical picture in the chronic cases arose from narrowing of the bony canals in the process of the hyperplastic bone changes, and that the optic nerve was thereby compressed in the optic canal, producing disc swelling with loss of vision. That the recurrent pain in the second division of the fifth and Vidian—usually diagnosticated migraine—was explained also by narrowing of their confines. In many of the cases these headaches preceded the optic nerve troubles by many years. He attempted to explain this on the score of drainage, the lower part of the sinus usually being bathed in a small amount of thin secretion, whereas the optic and the upper part was not so. He thought the hyperplastic lesion rendered the district more vulnerable, and cited that small areas here become inflamed from unrecognizable origin, and according to their position were more or less disastrous.

In the upper outer anterior aspect of the sinus, loss of vision occurred; and in the lower outer and lower middle parts, great pain of maxillary and Vidian distribution, respectively. He raised the question, how lesions of this kind could be bettered by removal of bone for drainage. He did not believe that the primary blood letting of the surgery explained it, and cited a case in argument thereof. He stated that a similar lesion in the anterior nose, where very easily visible, was subject to recessions of longer and shorter duration, and that the condition was apparently helped by judicious surgery. The degree of hyperplasia of the plica septi seemed to be an index of the hyperplastic process in the sphenoid, whereas the degree of hyperplasia of the posterior tip of the middle turbinate seemed an index of a similar condition in the postethmoid.

He appended Dr. Wright's summary upon concluding the examination of the series of specimens.

Headaches Due to Nonsuppurative Intranasal Conditions. DR. GEORGE C. STOUT, PHILADELPHIA.

Headaches of nasal origin, in which suppurative conditions are positively eliminated by microscopic examination, trans-illumination, the X-ray, etc., have not occupied a prominent place in our literature heretofore. But, while these headaches are found in a relatively small per cent of the cases who consult the specialist, they are of sufficiently frequent occurrence, and severe enough in their result upon the nervous and mental condition and general health of the patients, to warrant their being considered as a group by themselves.

The pain varies from occasional attacks of moderate degree to frequent seizures of intense agony. It is commonly referred to an area back of a triangle formed by the glabella, the outer canthus of the eye, and the anterior nasal spine. It may also affect the teeth, the neighborhood of the eustachian tubes, or ears, sometimes extending down to the shoulder. It is usually unilateral, but may be bilateral, or occur on both sides alternately. It is not increased by the use of the eyes, though sharp, shooting pains through the eyes are often present. When the pain has existed for a long period the effect upon the patient is deplorable: his general health is undermined, and his mental condition profoundly depressed.

Owing to the very slight departure from normal of the rhinoscopic picture, these cases frequently pass through many skillful hands before the true cause of the pain is recognized. A thorough routine examination of the middle turbinate fossae should, therefore, be made in all doubtful cases. All the more common causes of headache must be eliminated, such as neurasthenia, eye strain, febrile conditions, syphilis, malaria, digestive disturbances, rheumatism, etc. The absence of pus and the condition of the eye grounds should be ascertained. The general appearance of the lower portion of the nose may be normal, but upon further examination it will be found that, while the middle turbinate itself may be of normal size and coloring, its cavity is narrow and compressed, either by the lesser upper (or counter) deviation of the septum, or by a bilateral thickening of the upper portion of the septum, or by a split septum due to injury. Careful exsanguination of the inferior turbinates and their immediate surroundings only should accurately determine the point of contact. The ex-

sanguination alone may so relieve the existing headache as to prove the chief localizing factor of the cause of the pain.

Treatment should be directed to the middle turbinate itself, and should consist, first, in frequent applications of cocain, adrenalin and astringents; and, second, as a last resort, the extirpation of a part, or the whole, of the middle turbinate. While the good results of the local applications may be only temporary, the operative procedure usually effects a complete cure of the pain.

The operation may be done under local anesthesia in the phlegmatic patient, but in others the general anesthesia is advisable. As a rule, there is no free bleeding after the operation, and the dressing consists merely in some mild antiseptic powder. The after-treatment consists in keeping the nares wide open and the insufflation of calomel powder every second day.

DISCUSSION OF PAPERS BY DR. SLUDER AND DR. STOUT.

DR. CORNELIUS G. COAKLEY, New York City: I have been discouraged by the migraine type of cases described by Dr. Sluder. I have, however, seen numbers of these patients, sent by ophthalmologists, with varying conditions. In all cases there is a question whether there has been any disease in the posterior sphenoidal and ethmoidal sinuses. None of these cases present typical signs of suppurative disease. Radiographs show nothing, the sinuses always appearing perfectly normal. In most of these causes of the trouble cannot be found in the nose, and that the etiology the tests, excluding all the usual causes of the disease to be found in the eye. The statements which have come to me have usually been that the cause of the trouble cannot be found in the nose, and that the etiology cannot be determined. The majority are not likely to get better without some aid. I have probed the sphenoidal sinus—which can be comparatively easily done—and have examined that portion of the sphenoidal mucous membrane which can be reached with the probe, finding it relatively normal. At the request of the ophthalmologist I have removed the middle turbinate, made a large opening in the sphenoid, and have found normal membrane. I have been astonished at the improvement in most of these cases, although the vision has been bad for two to three weeks, followed by complete recovery.

I have tried to use the Holmes pharyngoscope as described by Dr. Sluder, but I do not see how he gets into the sphenoid so as to make the use of the Holmes pharyngoscope possible. I have been able to examine a little of the roof and floor, some of the posterior wall, and a little of the anterior surface. The great difficulty with all sphenoidal operations is that the orifice becomes very much contracted, so that in the course of six or eight weeks the opening is no larger than normal, and sometimes smaller. If the essayist will tell us how to make an opening that will remain, I will be obliged to him.

Referring to Dr. Stout's paper, I wish merely to say that pressure against the anterior wall does give rise to these symptoms.

DR. JOHN F. BARNHILL, Indianapolis: We see cases over and over, such as Dr. Stout describes, in which removal of the anterior turbinate relieves the condition. Removal of tissue in the nose with no clear indication for doing so is to be deprecated. The matter of diagnosis is of the greatest

importance. X-ray and blood examinations should be made, but patients will often not allow it. My greatest source of information has been from the University clinic, where we have advantage of all the channels from which information comes. Sometimes when all the lines of investigation have been followed—X-ray, ophthalmologic, and blood examination—we find appendicitis. I recall three instances of that kind. We may take a line here from our friends, the surgeons, in the far northwest. Nose cases are going to them to-day, as well as all other classes of cases, because of the tremendous reputation they have for examining patients in every way with the one cost. When we examine them and have all the other examinations made it amounts to hundreds of dollars.

Very often the trouble is not in the nose at all.

DR. HANAU W. LOEB, St. Louis: The merit of Dr. Sluder's paper rests in the determining of trouble in the sphenoid cavity when no pus is present, and discovering the relation of this trouble to the cranial nerves. This is a good deal to find out in a few years.

Dr. Stout's paper is also important. There are two or three points which will establish the diagnosis in these headaches—headaches in which I operate upon the middle turbinate. They are uniform in character; they attack one side of the nose, one part of the head; they last a more or less definite number of hours, then disappear; they almost invariably appear in the morning and disappear in the evening. As a rule, I refuse to operate unless cocain relieves them, and unless there is some marked process present. It is sometimes the case that I am surprised to find the amount of pathologic process going on when there is no pus. Whether the cause is circulatory or not, I do not know. We have been able to do an immense amount of work in relieving the patient where the anterior turbinate is involved, but we have not been able to do much where the posterior sinus roots are involved. Dr. Sluder's work is important in this regard.

DR. GEORGE A. LELAND, Boston: Not the large amount of pressure, but the continuous pressure, explains some of these cases. This may be illustrated by pressing upon the skin of the hand. It requires only a short time to cause considerable pain, which may not be felt so long as the pressure is exerted, but which manifests itself as soon as the pressure is removed. We have the same condition in the nose. There is a certain amount of soft tissue covering the cartilage. I have seen cases in which a little spicule of bone, sticking out from the septum and pressing upon the second turbinate, will cause pain when, during menstruation, there is an increase of pressure, or when the patient eats too much or drinks too much; and with this increased pressure there is the headache which comes under similar conditions.

DR. WILLIAM E. CASSELBERRY, Chicago: I can confirm the observations of the essayists as to the total absence of pus at times. If pus in the quantity described by Dr. Coakley is considered as an indication of the presence or absence of suppurative sinusitis, I am in accord; but in other cases smaller amounts of pus may occur in one or another of the sinuses, not shown by X-ray examination. But, ad seriatim, taking the antrum, the sphenoid, the ethmoids, I have been able to discover an appreciable quantity of pus or mucopus, which amounts to the same thing. I am

under the conviction that in most of these cases there is a suppurative condition which is at the bottom of the hyperplasia complained of.

Dr. James E. Logan, Kansas City: I recall one case, in which the headache came periodically in the morning, stopping in the evening. The young man suffered from very extreme headache, beginning about nine o'clock in the morning and stopping about four in the afternoon. He had been operated upon for removal of a portion of the middle turbinate. The headache persisted—nasofrontal headache. I removed the rest of the middle turbinate and opened the duct, thinking pus was there. Very little pus was found. The patient suffered continuously with the headache, which gradually came later in the morning and remained later in the afternoon. Finally, by suction, I got secretion from the nasofrontal duct. This was sent to the pathologist, and it took forty-eight hours to get a culture, which showed a very faint mixed infection, with staphylococcus aureus and streptococcus. An autogenous vaccine was made from this, three injections of which were given, and the patient got well. The same course was followed in another case, and the patient was given relief. Nothing else had given relief. Such cases would seem to indicate, as Dr. Casselberry has just suggested, that the pus is there and can be found if we look for it.

Dr. Emil Mayer, New York City: The amount of pus may be very small in these cases. I recall, in this connection, an experience at Mount Sinai Hospital. The patient, a young man, who had acromegaly, presented a history of persistent headaches. He had high temperature, muttering delirium, and choked disc, and as a result examination of his nose was exceedingly difficult, and required skillful dodging. I succeeded, however, in getting a little pus, but said I thought very little could be done for him. The attending physician thought operation was all that could be done, and so I removed the anterior portion of the ethmoid. In twenty-four hours the headache and delirium had cleared up. Some of those in consultation thought I operated at a time when the man was in some sort of crisis. I do not think so. I introduced a probe into the sphenoid and had an X-ray taken. The result was a perfectly clear picture of the probe in the sphenoid and all then agreed that I was right.

Dr. Otto T. Freer, Chicago: Even very extreme conditions, where there is a sharp crest or ridge very far back in the nose, so rarely causes headache that I have become very skeptical of pressure headaches in general. The whole question is one of reflex. Where we try to remove the effect by the use of cocain, we are just as much in the dark as we were before. This is, in fact, an open door for all sorts of experimental operations. The patient may be told that it is entirely experimental, the septum is resected, the patient is no better, and still he blames the doctor, no matter how plainly he has tried to impress that the operation is purely experimental.

I agree with Dr. Casselberry about concealed suppuration, but I wish he had been a little more specific as to his method of exploring the sinus. Exploring the sinus through the natural opening is not always satisfactory. I recall a case in which the thin roof of the antrum had been perforated by the canula, the injecting fluid injected into the orbit, and the

eye put out. I do not regard washing out the antrum through the natural opening as an entirely safe procedure. The frontal sinus is still more difficult for diagnostic washing. It is sometimes by no means a trifle. In one case which I recall the patient fell over in a convulsion. The fluid could not get out through the small opening, and there was intracranial pressure. One thing that gives an indication of concealed infection is the complaint by the patient of a discharge running back into the throat. A perfectly healthy sphenoid and infundibular region usually does not go with diseased ethmoid. Something must be there to give us a hint. The nerve most often affected, in my experience, is the anterior ethmoidal, which is a very sensitive nerve, as Killian has shown.

DR. CASSELBERRY, continuing the discussion: In a recent issue of the *London Journal of Laryngology, Rhinology and Otology*, Kelly, of Glasgow, records no less than thirty cases of bad results from exploratory puncture by the penetration of the antrum. The one Dr. Freer mentions is the first I have heard of in an attempt to irrigate the antrum through the natural opening. When he puts in the canula and penetrates the orbital plate he is not irrigating through the natural opening. The canula with which I irrigate through the natural opening is very thin, reasonably thicker where I hold it, having more than a right angle turn at the bend, and not exceeding more than from one to two millimeters in length. Properly introduced, it will serve for the irrigation of the antrum through the natural opening, which can be accomplished safely in the majority of instances. The stopcocks must be arranged and the air pressure regulated. Not more than ten pounds pressure should be used to begin with, otherwise harm will be done. This is run up as the operation proceeds. The same thing is true of all the other sinuses.

DR. J. GORDON WILSON, Chicago: Dr. Sluder's paper is extremely interesting and suggestive. It does not mean that there may not be disease of the sinuses without suppuration. That depends, of course, upon what we mean by without suppuration. There may be hyperplasia of any sinus without any suppuration at all. Some years ago I did some work in the way of putting capsules into the sinus, having introduced into these capsules different forms of bacteria. The capsules were so arranged that the bacteria would not come out, but their toxins would. There was hyperplasia in these cases. I used dogs for these experiments, some of which were kept alive for several weeks. I have often wondered how infection passes along these nerve trunks. I suggest, as quite possible, that there may be absorption of the toxins from the lymphatics into these nerve trunks.

DR. SLUDER, closing the discussion: Answering Dr. Coakley's question about the method of operating: The outlet and the sinus itself must be large enough to permit of the use of the pharyngoscope. I use a right-angled knife. The posterior part of the cribriform plate and the posterior and uppermost aspect of the olfactory plate are approached, the sphenoid sinus or one of the misplaced ethmoidal cells being punctured by such a stroke. As soon as the cell is punctured the stroke is directed downward, forward, and inward. The septum is cut down to the floor of the sphenoid. The knife is then introduced carefully along the cribriform plate. Again the uppermost posterior aspect of the olfactory plate is approached.

The knife is then turned at an angle of forty-five degrees, and downward and outward. This, on the cadaver, has been proved to throw the posterior ethmoidal labyrinth pretty thoroughly open every time. By means of the pharyngoscope it is found that there are two very satisfactory openings into the posterior ethmoidal cell, and sometimes the sphenoidal. Sometimes it is possible to get it all out in that way. Dr. Wright has one such specimen, measuring a half inch in diameter.

DR. COAKLEY spoke of being unable to get good observation with the pharyngoscope. I always operate under cocain. I uniformly refuse to operate upon these patients except under cocain. I give them scopolamin first. The primary stroke is sufficient to produce enough shock, and at the same time to prevent the wound from bleeding. With the pharyngoscope close at hand it can be passed in. The patient may faint; let him faint. The wound for a time does not bleed.

I have some cases in which the opening stayed open for five or six years. I have never seen membranous closure, as suggested by Dr. Bryan, but I have seen bony closure, as suggested by Dr. Coakley.

DR. LOEB spoke of congestion in the sinus, which he thought more responsible than the vacuum of which I spoke. Politzerization will stop the trouble. The congestion is the result of the vacuum.

DR. LELAND has given a valuable point about the little pressure of long standing.

I have tried vaccines repeatedly, as suggested by Dr. Logan, but have not gotten the results.

DR. MAYER spoke of crises and the use of ergot. In my text I brought out, partly as a matter of speculation, that there is in some canals a considerable pad of fat; in the optic canal there is exceedingly little. If this hyperplastic process narrows the canal and this pressure is maintained for a considerable time, nature's shock absorber is used up. Sometimes a trifling indigestion will start up the trouble, just as sometimes a trifling thing will diminish the vision. If ergot is given when there is this congestion, it will contract the tissues and relieve the headache.

DR. STOUT, closing the discussion: I merely wish to say, with reference to Dr. Casselberry's remarks, that I distinctly said there was apparently no pus.

The Effects of Radioactivity Upon Nasopharyngeal Fibroma. DR. D. BRYSON DELAVAN, NEW YORK CITY.

The conditions due to the presence of this growth are usually so urgent as to demand relief.

For this three varieties of treatment have thus far been practiced:

1. Removal of the tumor after preliminary operation done for the removal of obstructing parts.

2. Removal through the natural passages by evulsion or with the cold snare.

3. The reduction of the size and the vascularity of the tumor by electrolysis or by the injection of various chemicals, followed by the removal of the remaining mass by means of the galvanocaustic loop.

Of these methods the first is illogical, unsurgical, and, as experience has abundantly proved, deadly; shock from the preliminary operation

is severe, hemorrhage profuse, and if the patient survive, deformity from the preliminary operation is serious and recurrence of the growth common.

The second method is much better than the first, but may provoke serious hemorrhage and shock, and is apt to be followed by recurrence.

The third method is by far the best. Although tedious and sometimes painful and requiring considerable skill, statistical comparison shows that of twenty-seven cases removed after severe preliminary operation in which end results were given, fifty-nine per cent were reported "cured" and twenty-six per cent died. Of forty-one cases removed through the natural passages by evulsion or the cold snare, five per cent died; and of sixty-six cases by electrical methods, one hundred per cent were cured.

Much attention has of late been given to the treatment of uterine and other fibromata by means of the X-ray and of radium, and both in the United States and in Europe the apparent success attained renders the method worthy of consideration. The similarity of type between the uterine and pharyngeal growths at once attracts the attention of the laryngologist to the new treatment.

Fibromata of the nasopharynx are relatively much smaller and more directly accessible.

The complete reduction of the nasopharyngeal growth might not be essential, since it tends to diminish spontaneously after adolescence and finally disappears. If its growth could be controlled during the earlier years and until after the period of its activity, nature would in some cases at least intervene to effect a cure. Cases of slow development occurring in older rather than younger patients would offer the best prognosis. Judging from the effects of radium in other cases, its action would be active and profound: more may reasonably be expected from it than a moderate reduction in size.

Dr. Robert Abbe, pioneer in the use of radium in the United States, has originated many ingenious devices for its application to various organs of the body, and especially for its use in the nasal and nasopharyngeal region.

In the application of the radium, the parts to be treated must be exposed to the rays, and the healthy surrounding parts must be protected from them. It is not necessary that the radium should be introduced bodily into the substance of the growth, as the blood vessels of the growth are more abundant near its surface, and as the rays penetrate at least a quarter of an inch, the treatment is entirely effective in profoundly influencing the circulation, and thus, as well as by its effect upon the connective tissue of the organ, causing a reduction of its size. Proper regulation of the strength of the radium and the duration of the exposure will prevent injury to the surrounding healthy parts. Should the radium treatment prove as valuable as it promises, the world may be congratulated that the unhappy record of past surgical failure will have been closed.

DISCUSSION.

DR. CORNELIUS G. COAKLEY, New York City: Dr. Francis Carter Wood has been experimenting, as all know, on various animal colonies with radium: he has also done some clinical work with this agent. He has

been kind enough to use it in several cases which I have sent him during the past year and a half. In a case of epithelioma of the nose, radium had a very favorable effect. The patient had a bad case of arteriosclerosis and died from cardiac trouble. All trace of the epithelioma had disappeared. Several cases of papilloma of the larynx were cured by radium. In one case the papilloma had existed from early childhood to the age of forty or more. In another case treated by him there was an angiofibroma which completely filled the nasal cavity, the mass being visible without a nasal speculum. He used eighteen milligrams in a very small glass tube wrapped in ordinary adhesive tape. This was thrust into the nose, and was followed by profuse bleeding. At the end of two weeks no change in the mass could be noted. For some reason the boy did not return to the clinic for eight or ten days, and when he returned it was found that the mass had decreased in size. A brass capsule containing eighty-three milligrams of radium was then inserted, the posterior end of this tube extending into the posterior nasopharynx. This was left in for twenty-four hours. The excoriation all around the face was simply remarkable. No X-ray burn ever compared with this burn. Dr. Wood told me I need not worry about it, as it would disappear, which it did. The radium was applied in February, and the inside has not completely healed. The patient can breathe through the nose, however, and it is possible to look right through into the nasopharynx. The mass is attached to the posterior wall of the nares and apparently somewhere in the posterior ethmoidal region on the left side. Since the radium has been used the hemorrhages which the patient had at irregular intervals have almost entirely ceased. The radium is pretty apt to cure this fibroma. A smaller dose in this case would probably have been better.

Dr. Otto T. Freer, Chicago: I have used radium, but not in the treatment of fibroma. We have at our command a means which we did not have a few years ago. I have removed a very large fibromata, with a keen knife, from behind, after having injected directly into the growth a double dose of pituitary extract, two ampullae, followed by adrenalin. The hemorrhage did not exsanguinate the patient. There has been one recurrence since.

Would not the combination of surgery with radium be less tedious and more satisfactory than radium alone in the removal of fibroma that enters all the cavities?

I was interested in the recovery which Dr. Coakley reported. Dr. Frank Dudley Simpson, of Chicago, who has employed it so extensively, says he has never had a recovery. I would like to ask Dr. Coakley how long after the use of the radium the burn appeared, and how long the radium was used.

Dr. Coakley, continuing the discussion: This is not the only burn which has come under my observation. I recall a case treated by Kelly, in which there was a most terrific burn, resulting in extensive infiltration and suppuration. That was a year ago last December. There was a recurrence of the epithelioma of the larynx, and the patient went down some time in March for further treatment. The radium was used without

external reaction, but with such extensive internal reaction, with swelling of the arytenoid folds and aryepiglottic tissues, that it was almost necessary to do a tracheotomy.

In the case I cited, the boy had had no treatment for a week, when superficial ulceration appeared all over the skin of the nose and cheek. It was extraordinarily painful. The pain following the use of radium is what patients object to. There is no question of its activity.

DR. DELAVAN, closing the discussion: I cannot conceal my great satisfaction with regard to the cases which Dr. Coakley has presented. I have been studying this matter of nasopharyngeal fibroma ever since I was an undergraduate student. I have seen the best surgeons take these cases and end with very unsatisfactory results. Statistics show that surgical procedures of any kind are dangerous. Evulsion, removal with a snare, and other methods, may be followed by hemorrhage. As far as I can compile statistics on the subject, there are five deaths in a hundred, as the result of shock or hemorrhage. There is always the danger of recurrence. The application of radium requires a certain amount of skill, but no surgical skill.

Sodium Bicarbonate in Hay-fever. K. E. KELLOGG, *N. Y. Med. Jour.*, Aug. 21, 1915.

Kellogg is of the opinion that hay-fever is essentially an acidosis and by reason of certain irritating qualities of the blood the mucous membranes become hypersensitive. His experience covers fifty cases and in ninety per cent. of them sodium bicarbonate given in dram doses three times a day produced a marked amelioration of symptoms, of which seventy per cent. were completely relieved after a few days' treatment. The remaining ten per cent. were also benefitted, although not so markedly as the others.

The improvement of the local symptoms seemed to be independent of the exciting cause (cotton weed, rag weed, wild rose, golden rod). In three cases the internal administration of the sodium bicarbonate was supplemented by a nasal spray with a solution of the same alkali.

Kellogg suggests that the sodium bicarbonate acts by preventing the pollen toxins from going into solution. ED.